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CANADA

Tariff Board

Report (by) of the Tariff
Board in Referencees.

(THE TARIFF BOARD)

Relative to the Inquiry Ordered
by the Minister of Finance
respecting

CHEMICALS

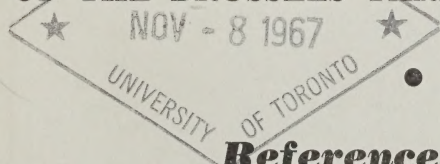
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VOLUME 6

INORGANIC CHEMICALS IN HEADINGS

26.03, and 28.18 to 28.34

OF THE BRUSSELS TARIFF NOMENCLATURE



•
Reference No. 120



Report by
THE TARIFF BOARD

Relative to the Inquiry Ordered
by the Minister of Finance
respecting

CHEMICALS



VOLUME 6

**INORGANIC CHEMICALS IN HEADINGS
26.03, and 28.18 to 28.34
OF THE BRUSSELS TARIFF NOMENCLATURE**



Reference No. 120

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1967

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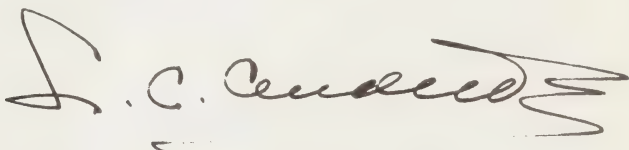
The Honourable Mitchell Sharp, P.C., M.P.
Minister of Finance
Ottawa

Dear Mr. Sharp:

I refer to Mr. Harris' letter of September 21, 1956 and to Mr. Fleming's letters of October 11, 1957 and December 21, 1959 in which the Tariff Board was requested to conduct an inquiry respecting chemicals.

In conformity with Section 6 of the Tariff Board Act, I have the honour to transmit Volume 6 of the Report of the Board, in English and in French. This volume contains the report on inorganic chemicals in Headings 26.03 and 28.18 to 28.34 of the Brussels Tariff Nomenclature. Further volumes will be forwarded to you as soon as they have been completed.

Yours sincerely,

A handwritten signature in dark ink, appearing to read "L. C. Cundee", with a stylized flourish at the end.

Chairman

Explanation of Symbols Used

- Denotes zero or none reported
- .. Indicates that figures are not available
- * In statistical tables, indicates a reported figure which disappears on rounding, or is negligible
- (a) A small letter in brackets denotes a footnote to a table
- (1) A number in brackets denotes a footnote to the text
- s.c. Denotes a Dominion Bureau of Statistics import or export statistical class

The sum of the figures in a table may differ from the total, owing to rounding

A Note on the Organization of the Report - Reference 120

The first four volumes of the Report by the Tariff Board respecting Reference 120, Chemicals, relate to the reference as a whole; the eleven volumes which follow (Volumes 5 to 15, inclusive) relate to the products which were the subject of the Board's inquiry. The principal subject matter of each of the volumes is given below in terms of the headings of the Brussels Tariff Nomenclature (B.T.N.). Occasionally, chemicals of different B.T.N. headings are dealt with together, for example, chlorine (28.01) and caustic soda (28.17); the more detailed tables of contents of the individual volumes indicate where this occurs.

To the extent that particular statistical tables could be related to specific products or B.T.N. headings they are included in the statistical appendix of the volume which deals with that product or heading. Some tables, which could be related only to broader groupings of chemicals, are included in the statistical appendix to the last volume dealing with such broader groupings: inorganic chemicals in Volume 7, organic chemicals in Volume 9 and artificial resins and plastics in Volume 15.

Because of the unprecedented amplitude and complexity of Reference 120 - Chemicals, many parts of Volumes 5 to 15 were written a considerable time before the first four volumes. This gives rise, occasionally, to apparent discrepancies, attributable to the passage of time, particularly between Volume 4 and those which follow.

Table of Contents for Volumes 1 to 15, inclusive

General Volumes

<u>Volume</u>	
1	Recommended Schedule
2	Goods in Recommended Items
3	Goods in Existing Items
4	General Considerations; Summary and Conclusions

Reports on Products

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5	Inorganic Chemicals	25.01, 25.03, 28.01 to 28.17, and 28.54
6	Inorganic Chemicals	26.03 and 28.18 to 28.34
7	Inorganic Chemicals	25.32 and 28.35 to 28.58
8	Organic Chemicals	15.10, 15.11, 22.08, 22.09 and 29.01 to 29.13
9	Organic Chemicals	15.10 and 29.14 to 29.45
10	Fertilizers	Chapter 31
11	Dyes, Paints, Inks, Fillers	25.09 and 32.01 to 32.13
12	Detergents; Explosives	34.02, 36.01, 36.02
13	Misc. Chemicals & Preparations	37.08 and 38.02 to 38.19
14	Artificial Resins & Plastics	39.01 and 39.02
15	Artificial Resins & Plastics; Other Portions of Reference 120	39.03 to 39.07

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Note: Reports on products in other headings of B.T.N. Chapter 28 are contained in Volumes 5 and 7.

* The numbers shown after product designations are those used in the Brussels Tariff Nomenclature.

OXIDES, HYDROXIDES AND PEROXIDES - B.T.N. 28.18 to 28.28INTRODUCTION

In the course of the hearings on Reference 120, Chemicals, representations were made concerning a large number of oxides and hydroxides which are classified by headings 28.18 to 28.28 of the Brussels Tariff Nomenclature. The products which came before the Board are presented in the order of the B.T.N. headings in this section of the report.

In total, these oxides have very substantial commercial importance with a value of sales of the order of \$40 million. Canada's international trade in them also reaches significant proportions, with imports of the order of \$6 million and exports of about \$4 million.

Oxides frequently occur as minerals and, while this report is concerned primarily with forms of the products that can be regarded as chemicals, the terms of reference encompass some products which are more usually regarded as minerals. A considerable part of the discussion of the products at the public hearing was taken up with a presentation of views on how best to classify the products in order to conform with the terms of the Board's reference and at the same time to present the most satisfactory classification of products for purposes of tariff administration. The problem, of course, is not peculiar to the oxides and hydroxides; it occurs throughout the report in many other contexts as well.

Partly because of their extensive occurrence in natural forms, the oxides have a long history as products of commerce, particularly as pigments and colours. In some instances the natural forms of antiquity have been substantially modified and forms of greater chemical purity are produced to meet more exacting requirements or to meet the competition of newer products obtained by chemical processes. Some of the companies which came before the Board, as producers of paints and pigments, had a long association with some of the oxides, and other companies tended to produce specialty products such as lubricants and enamel frits which derived their special characteristics from the oxides which were used in their production. Many of the products are not made in Canada and the principal interests in them were expressed by producers abroad, their Canadian agents or affiliates, or by the users of the products in Canada.

Although very many oxides and hydroxides are classified by the headings that make up this section of the report, a few of them account for most of the commerce. Titanium dioxide, alone, accounts for more than one-half of the value of sales in Canada of all of the oxides in this section. Lead oxide, zinc oxide, magnesium oxide, iron oxides and molybdenum trioxide also have substantial commercial importance. Certain others, which trade in smaller amounts, have special uses in which they are regarded as unique. However, the total value of sales of all of these other products, taken together, is estimated to be about \$2.4 million.

A large number of products in headings 28.18 to 28.28 are not made in Canada; imports of these are about \$1.4 million annually.

For the oxides which are made in Canada, domestic producers supply about 86 per cent of sales. Imports of products which are available from Canadian production are about \$5 million annually, about \$800,000 dollars more than the estimated annual exports.

The products are presented in this section in the order in which they are classified by the Brussels Tariff Nomenclature, by headings 28.18 to 28.28 inclusive. Heading 28.28 is used to classify a miscellaneous group of oxides and hydroxides, and the order of presentation under that heading is noted in the introduction to it.

OXIDES, HYDROXIDES AND PEROXIDES, OF STRONTIUM, BARIUM OR MAGNESIUM
B.T.N. 28.18

Only three products of B.T.N. heading 28.18 were the subject of formal submissions, namely barium oxide, barium hydroxide and magnesium oxide. These are dealt with below. At the public hearing, in November 1960, the spokesman for the Industry Committee said:

"To the best of the Committee's knowledge, the product submissions which the Board has received for this hearing cover all commercially significant products of this heading."(1)

BARIUM OXIDE AND BARIUM HYDROXIDE

Neither barium oxide nor barium hydroxide is produced in Canada. The oxide was said to be used by Monsanto Canada Limited in the manufacture of additives for lubricating oils. The hydroxide was said to be a basic component of certain lubricating greases which are manufactured at Clarkson, Ontario by the British American Oil Company Limited; it is also used by Ferro Enamels Canada Limited as a stabilizer for vinyl type synthetic resins.

Barium oxide and barium hydroxide are closely related chemical products, the latter being the aqueous solution of the former. The Monsanto spokesman said that he would consider them to be interchangeable in his company's process. Both products are imported mainly or entirely from the U.S.A.; the value of imports in 1963 was \$65,000.

B.A. Oil, in a letter to the Board, said the company

"supports the proposal of the ... Industry Committee that barium hydroxide be accorded duty-free entry until this material is made in Canada. We are not, therefore, recommending a permanent exception from the heading rate $\sqrt{15}$ p.c., B.P. and 20 p.c., M.F.N./ but, rather, a temporary exception until barium hydroxide is produced in Canada."(2)

At the public hearing, in May 1963, Ferro Enamels Canada Limited supported the proposals of B.A. Oil.(3)

(1) Transcript, Vol. 14, p. 2036

(2) Same, Vol. 14, p. 2038

(3) Same, Vol. 165, p. 24408

Both B.A. Oil and Ferro Enamels contended that no Canadian manufacturer would benefit by the imposition of a duty because the product was not made in Canada. Ferro Enamels also noted that the existence of a duty while the product is not made in Canada would subject Canadian users to "penalties which place them in an unfair competitive position with imported products in which these chemicals are used."

When considered to be chemicals, both products are entered under item 208t at rates of Free, B.P. and 15 p.c., M.F.N. Both may also be entered under temporary item 220e, at Free, B.P., 5 p.c., M.F.N. when for use in the manufacture of additives for heating, lubricating and fuel oils.

When used as a stabilizer for synthetic resins, the hydroxide, while not ruled to be made in Canada, may be entered free of duty under tariff item 92l.

Some forms of barium oxide may be entered as oxides under tariff item 246, at rates of 12½ p.c., B.P. and 17½ p.c., M.F.N.; most, however, if not entitled to end-use treatment, are entered under tariff item 208t at Free, B.P., 15 p.c., M.F.N. The distinction between mineral and chemical is difficult to make and, at times, requires information on the process used in the product's manufacture.⁽¹⁾

The spokesman for Monsanto proposed that the existing rates under end-use item 220e be retained in an item worded like B.T.N. heading 28.18, until barium oxide is made in Canada. He supported the Industry Committee proposal that when it is made in Canada the rates should be 15 p.c., B.P. and 20 p.c., M.F.N. Under questioning he indicated that free entry under both Tariffs would be preferable to the existing free entry under the B.P. Tariff and 5 p.c., M.F.N., under item 220e.⁽²⁾

Laporte Chemicals Canada Limited informed the Board that, although the company had not made a formal submission, it was concerned lest there be a loss of preference which would affect its parent company which manufactures both barium hydroxide and barium oxide in the United Kingdom.

The B.T.N. and the Customs Tariff appear to treat barium oxide similarly. In the B.T.N. calcined witherite, which consists largely of impure barium oxide, is classified as a mineral under heading 25.11. The barium oxide which is obtained by chemical processes is under heading 28.18. In the Customs Tariff the former may be considered an oxide under tariff item 246; the material made by chemical processes is considered to be a chemical under item 208t. Both forms may be entered under item 220e. The available information indicates that the barium hydroxide which enters trade is manufactured by chemical processes and would therefore be classified under item 208t and heading 28.18.

(1) Transcript, Vol. 15, p. 2050

(2) Same, Vol. 14, p. 2041

MAGNESIUM OXIDE

The Product and Process of Manufacture

At a public hearing in November 1960, there was considerable discussion of the method of distinguishing between magnesium oxide, the mineral, and magnesium oxide, the chemical. This question was of importance from the standpoint of administration of the Customs Tariff and also because the mineral forms of the product were generally outside the terms of reference of the current inquiry.

Magnesium oxide may be obtained from the mineral magnesite, a natural magnesium carbonate, and from the mineral brucite, a natural magnesium hydroxide. Magnesite can contain up to 47.6 per cent magnesium oxide and brucite up to 69.0 per cent. When these minerals are heated to high temperatures (2000° F. or more) magnesite releases carbon dioxide, brucite releases water, and both yield a product which may contain 90 per cent or more of magnesium oxide. The temperature and time of heating are important factors in determining the properties of the end product. In Canada, a major source of magnesium oxide is brucitic limestone, an intimate mixture of brucite (magnesium hydroxide) and calcite (calcium carbonate).

The amount of heat to which the minerals are subjected results in products described by such terms as "calcined", "caustic calcined", "sintered" and "dead-burned". In commercial practice these terms are not always used precisely. For magnesium oxide, the terms "calcined" and "caustic calcined" are synonymous and are generally applied to materials which have been heated to a temperature of about 2,000 to 2,200 degrees Fahrenheit. The terms "sintered" and "dead-burned" are also synonymous and are applied when temperatures of about 3,000 degrees Fahrenheit are used.

"Periclase", a form of magnesium oxide, is described by the Department of Mines as a dead-burned product which contains 92 per cent or more of magnesium oxide and minor amounts of iron; the term, however, is often used less precisely in commerce.

Magnesium oxide also occurs in brine bitterns and sea water as magnesium salts and is recovered by a process of chemical precipitation. The product obtained in this way generally contains fewer impurities and can be more highly concentrated than the product produced from minerals. However, products of equal purity and concentration can also be produced by using relatively pure minerals. As a result, for some grades of magnesium oxide there are no chemical or physical tests which can differentiate between magnesium oxide produced by the treatment of minerals and that obtained by chemical precipitation. As with barium oxide, the Department of National Revenue sometimes needs to establish how the particular product was produced in order to determine whether to classify it as a mineral or a chemical.⁽¹⁾

This problem of classification is reflected in the statistics. The available data for magnesium oxide do not distinguish between mag-

(1) Transcript, Vol. 15, p. 2050

nesium oxide produced chemically and that produced by heating naturally occurring magnesium carbonate. As a result, magnitudes can be indicated only in very general terms.

The Industry

In Canada, magnesium oxide is manufactured only from the minerals magnesite and brucite; in the U.S.A., sea water and other natural brines are the major source of magnesium oxide although the product is also produced from minerals. Only one company in Canada produces magnesium oxide for sale, Aluminum Company of Canada Limited (Alcan), at Wakefield, Quebec; the company quarries brucitic limestone and processes it to recover magnesium oxide and lime and, since 1963, to produce magnesium hydroxide. The primary product from these operations is "magnesia 90", a calcined product which contains about 90 per cent of magnesium oxide. The Wakefield plant of Alcan had a capacity of approximately 20,000 tons a year in 1959. At Kilmar, Quebec, magnesite is mined and processed by Canadian Refractories Limited. The company uses most of its output captively at Marelan, Quebec, for the production of refractory bricks and ramming mixes. It sells these mainly in Canada but also exports some, chiefly to the U.S.A.⁽¹⁾ The discussion at the hearing suggested that the company produced about 10,000 tons annually. The spokesman for Canadian Refractories said that the company did not ordinarily sell magnesium oxide or the periclase; he also said that the company imported periclase of a particular quality for the production of refractory bricks.⁽²⁾

The Market

The Department of Mines and Technical Surveys estimates:

"that about 70,000 tons of the dead-burned and calcined types of magnesium oxide are consumed annually: about 62,000 tons in refractories and about 8,000 tons for other purposes. More than one third of the total consumption is imported. In 1964, consumption could be 5,000 tons higher owing to the requirements for 8,300 tons of magnesium hydroxide at two of the pulp and paper plants scheduled to use the magnesite process."⁽³⁾

According to the Department, the value of Canadian production reached a record of \$3.5 million in 1964. All production was in Quebec and consisted of dead-burned and calcined magnesia, and magnesium hydroxide.

"Dead-burned magnesia, the most commonly used type, is employed as an ingredient in such basic refractory products as bricks and shapes, hearth clinker, gunning and ramming mixes, cements and mortars. It has the ability to withstand the effects of basic slags for reasonable periods in metallurgical processing.

(1) Canadian Minerals Yearbook, 1963

(2) Transcript, Vol. 15, p. 2108

(3) Canadian Minerals Yearbook, 1963

"Calcined magnesia is used as a raw material in the production of other magnesium compounds. Its use will increase with the rising demand for magnesium hydroxide as an ingredient in dissolving liquor for paper-pulp manufacture. Occasionally, calcined magnesia is used as a raw material in the production of the dead-burned product for use in refractories. It is a source of magnesium metal ... Magnesia is also used to control acidity in chemical processing, as a constituent of manufactured fertilizers, and in the production of heating elements, rayon, rubber, petro-chemicals, magnesian chemicals, welding-rod coatings, certain types of insulation and catalysts.

"The current trend toward increased application indicates a promising future for magnesia and its products."(1)

The use that is to be made of the product is intimately linked with the form that is required. For example, periclase, a dead-burned, relatively pure form of magnesium oxide, contains a minimum of 92 per cent magnesium oxide and may have as much as 97 or 98 per cent magnesium oxide and minor amounts of impurities such as iron. Both the magnesium oxide content and the kind of impurity may affect its use. As noted above, although Canadian Refractories produces periclase capatively, it also imports special grades for use in the manufacture of refractory products. The spokesman for Pyrotenax of Canada Limited said periclase was not available commercially in Canada and that his company imported a special grade for insulation of electrical cable. He said that, to his knowledge, Pyrotenax was the only Canadian user of this particular grade.(2) The spokesman for the Canadian Pulp and Paper Association stated that the grade of magnesium oxide required for the magnesite process must be soluble in a dilute acid solution and therefore could not be a dead-burned type.(3)

At the time of the hearing, magnesium hydroxide, the product used in the magnesite process, was not produced in Canada. In 1963, Alcan began to produce magnesium hydroxide at its plant at Wakefield, Quebec.

Foreign Trade

Canadian consumers import various types of magnesium oxide, some of which are not manufactured or sold in Canada; the preponderance of imports are of dead-burned magnesia. Imports of dead-burned magnesia amounted to almost 28,000 tons valued at nearly \$2 million, in 1964. Imports of caustic calcined magnesia, the form which would be competitive with the products sold by Alcan, varied between 2,300 and 2,900 tons annually in the five years 1959-63, with an annual value of about \$200,000. In addition, imports of "magnesium oxide (periclase)" were valued at \$230,000 in 1963. Thus, total imports of these kinds of magnesium oxide appear to be of the order of \$2.5 million annually. Most of these imports were from the U.S.A. and more than 85 per cent were of dead-burned magnesia entered under tariff item 296b(1).

(1) Canadian Minerals Yearbook, 1963

(2) Transcript, Vol. 90, p. 13656

(3) Same, Vol. 15, p. 2125

The spokesman for Alcan, the only merchant-producer of magnesium oxide in Canada, said that imports of material competitive with the products of his company were largely into Alberta. Costs of freight from Oregon, the location of the U.S. supplier, were said to be much less than from Wakefield, Quebec, and even with the duty of 15 p.c., the material could be delivered more cheaply from the U.S.A.⁽¹⁾ These statements suggest that the magnesium oxide which is imported into Ontario and Quebec is, in the main, not competitive with the products manufactured by Alcan.

An analysis of imports by province of entry reveals that the market in Alberta is relatively small and that most imports are into Ontario. In 1961 about 60 per cent, and in 1962 almost 90 per cent, of imports of dead-burned magnesia were into Ontario. Imports into Alberta are almost entirely of caustic calcined magnesia. As noted earlier, the dead-burned form is produced in Canada but is used captively in the production of refractory products.

Imports of Selected Magnesium Oxide, by Province of Entry
1961, 1962, 1963

	<u>1961</u>		<u>1962</u>		<u>1963</u>	
	<u>Dead-</u>	<u>Caustic</u>	<u>Dead-</u>	<u>Caustic</u>	<u>Dead-</u>	<u>Caustic</u>
	<u>burned</u>	<u>Calcined</u>	<u>burned</u>	<u>Calcined</u>	<u>burned</u>	<u>Calcined</u>
			-			
			tons			
Quebec	8,296	351	2,436	135	3,571	236
Ontario	13,393	1,161	22,200	1,000	12,517	820
Alberta	30	1,297	-	1,454	-	1,164
Other	<u>225</u>	<u>28</u>	<u>217</u>	<u>124</u>	<u>260</u>	<u>75</u>
Canada	21,944	2,837	24,853	2,713	16,348	2,295

Source: D.B.S., s.c. 7274 and 7275

Detailed statistics of Canadian exports are not available, but it is known that most exports are to the United States. U.S.A. import data indicate that in 1964 Canadian exports of magnesium oxide products to that country were valued at \$U.S. 3 million most of which was in the form of magnesia bricks and shapes. The Canadian Minerals Yearbook reports that these materials are also exported to other countries.

Pricing Policy and Prices

Magnesium oxide is available commercially in a wide range of grades for various uses. In the U.S.A., prices are published for calcined magnesia in two rubber grades, one technical grade, two U.S.P. grades, and for two grades of magnesite, chemical and dead-burned. The discussion at the public hearing indicated that there are other grades as well.

Both in Canada and in the U.S.A., published prices are f.o.b. plant. In 1965, the Canadian price was \$60 a ton for commercial grade, granular, bulk magnesia, in carload lots. The corresponding

⁽¹⁾ Transcript, Vol. 15, p. 2085

price in the U.S.A., f.o.b. plant, at Lunning, Nevada, was \$U.S. 49.50 a ton, 17.5 per cent less than in Canada at parity of exchange. Shipments from Nevada to the mid-west or the eastern U.S.A. would involve a costly rail haul.

Tariff Considerations

Magnesium oxide, of varying degrees of purity, physical form and process of manufacture, may be entered under at least six items of the Customs Tariff. They are as follows:

		<u>British Preferential Tariff</u>	<u>Most- Favoured- Nation Tariff</u>
296a:	Magnesite, crude rock	Free	Free
296b(1):	Magnesite, dead-burned or sintered; magnesite, caustic calcined; plastic magnesia	15 p.c.	15 p.c.
296e:	Magnesium oxide and magnesium carbonate, not further manufactured than ground, when imported by manufacturers of insulating materials for use exclusively in the manufacture of such insulating materials, in their own factories	Free	Free
296k:(a)	Dead-burned magnesite containing not less than 83 per cent magnesium oxide for use in the manufacture of magnesite fire brick or chrome fire brick	7½ p.c.	7½ p.c.
711:	Other than the above (when ruled to be of a kind produced in Canada)	15 p.c.	20 p.c.
208t:	All chemicals and drugs, n.o.p., of a kind not produced in Canada	Free	15 p.c.

(a) Effective November 1, 1963, after the public hearing on the oxides

The plastic magnesia listed in item 296b(1) is ordinarily produced by mixing magnesium oxide (calcined), magnesium chloride and water. It is often referred to as magnesium oxychloride cement, magnesia cement or magnesite cement. Plastic magnesia is classified in the B.T.N. under heading 25.19.

An officer of the Department of National Revenue, in a letter dated March 6, 1964, stated that in the administration of the Canadian

Customs Tariff, magnesium oxide, derived by precipitation from a solution, for example sea water, is classified as a chemical under tariff item 208t. Magnesium oxide derived by heating minerals, such as brucite, is generally classified as a mineral, under item 296b(1) unless it is imported for particular uses as provided, for example, under items 296e and 296k. Magnesium oxide of very high purity which, for example, meets the specifications of the B.P. or the U.S.P., is entered under item 208t regardless of the raw material used, as is electrically-fused magnesium oxide, some of which is derived from magnesite.

In the Brussels Tariff Nomenclature, magnesium oxide obtained by initial precipitation from a solution is classified by heading 28.18; magnesium oxide obtained by heating minerals, such as magnesite, is classified by heading 25.19.

Thus, if end-use items 296e and 296k are excluded, the Customs Tariff and the B.T.N. generally correspond in their definitions. However, although most of the very pure magnesium oxide is derived by precipitation and would be classified under item 208t and B.T.N. heading 28.18, some, which is produced from magnesite, is entered under item 208t but would probably be classified under heading 25.19 of the B.T.N. However, more than three-quarters of the magnesium oxide produced in the U.S.A. is by precipitation from a solution; most of this material probably would come under heading 28.18. The materials that would be imported under tariff items 296a, 296b(1) and end-use item 296k would, in the B.T.N., also be classified under heading 25.19; these items are not in Reference 120. The wording of item 296e suggests that the product imported under that item would be classified in heading 25.19.

At the November 1960 hearing, two Canadian producers, Aluminum Company of Canada Limited (Alcan) and Canadian Refractories Limited (C.R.L.), made representations to the Board. Alcan's proposals were intended to be "for a clarification of the Customs Tariff concerning Magnesium Oxide. It is in no way intended to be a request for higher tariffs ..." (1) C.R.L.'s submission was for maintenance of existing rates of duty under item 296b(1). The company opposed the free entry of periclase, as proposed by some of the briefs. (2)

Three companies and two trade associations proposed free entry for the magnesium oxide which they imported under item 208t. A.P. Green Fire Brick urged free entry for periclase; (3) the Pulp and Paper Association proposed free entry for the magnesium oxide known as reactive magnesium oxide or technical grade. (4) The Rubber Association of Canada (5) and Ferro Enamels Canada Limited (6) recommended free entry for all chemicals not made in Canada. The latter urged automatic application of rates of 15 p.c., B.P. and 20 p.c., M.F.N., when the product is made in Canada. Both the Rubber Association and Ferro Enamels listed magnesium oxide as a chemical in which they had an interest, the former,

(1) Transcript, Vol. 15, p. 2052

(2) Same, Vol. 15, p. 2109

(3) Same, Vol. 15, p. 2100

(4) Same, Vol. 15, p. 2114-5

(5) Same, Vol. 165, p. 24368

(6) Same, Vol. 165, p. 24409

as a vulcanizing agent, the latter, as a stabilizer for vinyl resins. Electric Reduction Company of Canada Limited proposed free entry for magnesium oxide, under the B.P. and M.F.N. Tariffs. The company recommended automatic application of rates of 15 p.c., B.P. and 20 p.c., M.F.N., when the chemical was ruled to be made in Canada.⁽¹⁾

Three companies and two trade associations recommended free entry, in end-use items, for magnesium oxide imported under either item 208t or 296b(1).

Refractories Engineering imports periclase under item 208t and urged that an end-use item be established, worded as follows:

"Magnesium oxide (periclase), not further manufactured than ground, when imported by manufacturers of refractory materials for use exclusively in the manufacture of such refractory materials in their own factories", free of duty under all Tariffs.⁽²⁾

Pyrotenax of Canada Limited also proposed an end-use item, free of duty under both the B.P. and M.F.N. Tariffs. The proposed wording was

"Magnesium oxide, or calcined magnesite, when imported by manufacturers of electrical cables for use exclusively in the manufacture of such electrical cables in their own factories."⁽³⁾

The company imported magnesium oxide under end-use item 296e.

At the hearing in May 1962, Alcan informed the Board that a relatively crude form of magnesium oxide which it manufactured was used as a fertilizer and applied directly to the soil. When not calcined, the product is entered into Canada under tariff item 662, as an unmanufactured fertilizer, free of duty under all Tariffs. If calcined, unless entered duty-free as a material for use in the manufacture of fertilizers (tariff item 663b), it is entered under item 296b(1), at rates of 15 p.c., B.P. and 15 p.c., M.F.N., even if for direct application to the soil as a fertilizer. The company proposed that magnesium-bearing materials, regardless of their purity, be entered free of duty under all Tariffs if for use as a fertilizer or in the manufacture of fertilizers.⁽⁴⁾

The Canadian Federation of Agriculture (C.F.A.) listed magnesia as a fertilizer or a constituent of fertilizers and proposed that free entry be continued under all Tariffs for materials used in the manufacture of fertilizers and supported rates of Free, B.P. and 5 p.c., M.F.N. for materials used as fertilizers.⁽⁵⁾ Under this proposal, uncalcined magnesium oxide for use as a fertilizer would continue to be entered free of duty as under item 662, and calcined magnesium oxide, for direct application as a fertilizer, would be entered at rates of Free, B.P. and 5 p.c., M.F.N., instead of at the existing rates of 15 p.c., B.P. and 15 p.c., M.F.N., as under item 296b(1).

⁽¹⁾ Transcript, Vol. 4, p. 674, 679

⁽²⁾ Same, Vol. 15, p. 2090

⁽³⁾ Same, Vol. 90, p. 13654

⁽⁴⁾ Same, Vol. 83, p. 12792

⁽⁵⁾ Same, Vol. 83, p. 12813

The Canadian Pharmaceutical Manufacturers Association listed magnesium oxide as one of the more important chemicals used by its members. The Association recommended that chemicals which were not made in Canada and were used in the manufacture of pharmaceuticals should be entered at rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for. When they are made in Canada, rates of 15 p.c., B.P. and 20 p.c., M.F.N., should apply.⁽¹⁾

A summary of the proposals and the existing items that would be involved, is given below.

<u>Proposed by:</u>	<u>Existing Tariff</u>			<u>Proposed</u>	
	<u>Item</u>	<u>B.P.</u>	<u>M.F.N.</u>	<u>B.P.</u>	<u>M.F.N.</u>
Alcan	*296b(1)	15 p.c.	15 p.c.	15 p.c.	15 p.c.
C.R.L.	*296b(1)	15 p.c.	15 p.c.	15 p.c.	15 p.c.
A.P. Green	208t	Free	15 p.c.	Free	Free
Erco(a)	208t	Free	15 p.c.	Free	Free
Ferro Enamels(a)	208t	Free	15 p.c.	Free	Free
Pulp Assoc.	208t	Free	15 p.c.	Free	Free
Rubber Assoc.	208t	Free	15 p.c.	Free	Free
Alcan(b)	*296b(1)	15 p.c.	15 p.c.	Free	Free
C.F.A.(b)	*296b(1)	15 p.c.	15 p.c.	Free	5 p.c.
Pyrotenax(c)	296e	Free	15 p.c.	Free	Free
Pharm. Assoc.(d)	208t	Free	15 p.c.	Free	15 p.c.
Refract. Eng.(e)	208t	Free	15 p.c.	Free	Free

* Not in Reference 120

(a) until made in Canada
 (b) for use as a fertilizer
 (c) for cable insulation

(d) for use in pharmaceuticals,
 until made in Canada
 (e) for use in refractories

Apart from end-use items, two items of the existing Tariff, items 296b(1) and 208t, were involved in the proposals. Alcan took the position that item 296b(1) gave the company adequate protection for the forms which it produced and the company had no objection to free entry under both the B.P. and M.F.N. Tariffs for the magnesium oxide now entered under item 208t or, as noted earlier, for any magnesium-bearing materials for fertilizer use.

C.R.L. also seemed to consider that a duty of 15 p.c. was sufficient to protect its interests. However, the company strongly objected to any reduction of the tariffs respecting periclase. C.R.L. produces a form of magnesium oxide which is directly competitive with periclase. The company uses this in the manufacture of ramming mixes and other refractory materials but does not offer it for sale. C.R.L.'s position was that if periclase was entered free of duty it would compete with the finished products that it produced. Therefore, the company opposed the proposal of Refractories Engineering for an end-use item under which periclase could be imported free of duty for use in the

(1) Transcript, Vol. 87, p. 13321

manufacture of refractory materials, and the proposal of A.P. Green for free entry for periclase in an item that did not specify any end-use. Thus, C.R.L. was opposed to free entry for manufactured magnesium oxide, regardless of whether the product was entered under item 296b(1) or 208t, or whether it was commercially available from Canadian production.

In effect, the consumers of magnesium oxide were unanimous in their request for free entry under both the B.P. and M.F.N. Tariffs, for forms of magnesium oxide which are not available commercially from Canadian production. Some of them recommended the application of rates of 15 p.c., B.P. and 20 p.c., M.F.N., when the products were commercially available in Canada; others did not qualify their proposals.

The consumers of magnesium oxide generally took the position that the magnesium oxide which they used was an important raw material in their processes of manufacture and that the existing M.F.N. duty of 15 p.c., under tariff items 296b(1) and 208t, constituted an additional cost. They said that the magnesium oxide which they imported was not available from Canadian producers and therefore the duty which they paid did not benefit Canadian manufacturers. C.R.L., of course, disputed the absence of any benefit. The consumers argued that the existing Tariff affected their competitive position adversely and they emphasized that the magnesium oxide for which they were proposing free entry was not available to them from Canadian manufacturers.

The A.P. Green Fire Brick spokesman pointed out that fire brick is entered free of duty under all Tariffs (item 281) but the major raw material, magnesium oxide, which is imported from the U.S.A., is dutiable at 15 p.c., the M.F.N. rate under item 208t. The Pulp and Paper Association stated that the new magnesite process had many advantages but required a large capital investment. The Association spokesman said that the 15 p.c. duty under item 208t tended to discourage the introduction of the process and that the anticipation of the rate rising to 20 p.c., the M.F.N. rate under item 711, when the product was produced in Canada, was also a serious consideration.

Alcan's proposals were intended to clarify the Customs Tariff for magnesium oxide, and to leave the way open for lower rates or free entry for forms of magnesium oxide not produced in Canada and entered under item 208t, apart from end-use items.

In the U.S.A., the principal country of origin of imported magnesium oxide, more than three-quarters of the output of magnesium oxide is by precipitation from sea water or other natural brines. If B.T.N. heading 28.18 were established as a new item, this material would be classified under heading 28.18. On the other hand, heading 28.18 would exclude very pure forms of magnesium oxide now entered under item 208t but produced by the application of heat to minerals; these would be classified by heading 25.19 of the B.T.N.

It should be noted that temporary end-use item 296k came into effect on November 1, 1963, after the hearings on magnesium oxide and the end-use items involved. This item would benefit A.P. Green and Refractories Engineering Limited, both of which requested reductions in the duties on periclase. Both companies intended to use periclase in the manufacture of refractory materials and they can now import the product, under this item, at $7\frac{1}{2}$ p.c., M.F.N. instead of the 15 p.c. M.F.N. rate formerly applicable under item 208t.

OTHER PRODUCTS OF HEADING 28.18

An interest was expressed in magnesium hydroxide by the Canadian Pulp and Paper Association, the Canadian Pharmaceutical Manufacturers Association and the Canadian Federation of Agriculture. The Pulp and Paper Association urged that there be no increase in the rates of duty on chemicals used by its members;⁽¹⁾ the Pharmaceutical Manufacturers Association proposed an end-use item for chemicals used in the manufacture of pharmaceuticals, at rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, until made in Canada;⁽²⁾ the C.F.A. spokesman said the Federation would not object to rates of Free, B.P. and 5 p.c., M.F.N., for materials used as fertilizers.⁽³⁾ Magnesium hydroxide in aqueous suspension (milk of magnesia) is made in Canada and is entered under item 711.

The Pharmaceutical Manufacturers Association also expressed an interest in strontium hydroxide for which it made a similar proposal to that for magnesium hydroxide.⁽⁴⁾ This product is entered under tariff item 208t at rates of Free, B.P. and 15 p.c., M.F.N.

No other products of B.T.N. heading 28.18 were brought to the Board's attention. The Industry Committee proposed that those products which were not the subject of proposals by others, be included in an item worded like B.T.N. heading 28.18 with rates of 15 p.c., B.P. and 20 p.c., M.F.N.⁽⁵⁾ The Committee did not indicate why these rates would be appropriate specifically for the products to which they would apply. The fragmentary data that are available indicate that products that were not the subject of other proposals have very little economic significance and do not appear to be manufactured in Canada.

ZINC OXIDE - B.T.N. 28.19

The Product and Process of Manufacture

Zinc oxide is a flaky white powder which turns yellow when heated and consists of either round or needle-like crystals, depending on the process of manufacture. The physical structure of the product and the size of the particles may be important considerations in its use.

One of two processes is commonly used to manufacture zinc oxide. In the French, or indirect process, metallic zinc is heated in the presence of oxygen. This process generally yields a product of high purity whose particles are essentially finely divided, amorphous crystals of zinc oxide. In the American, or direct process, zinc ore or ore concentrate is the raw material. The American process usually yields a less pure form of the product with larger, needle-like crystals. However, the book "Industrial Chemicals" states:

(1) Transcript, Vol. 36, p. 5246; Vol. 85, p. 13006

(2) Same, Vol. 87, p. 13321

(3) Same, Vol. 83, p. 12813

(4) Same, Vol. 87, p. 13321

(5) Same, Vol. 14, p. 2036

"Normally, American-process oxide consists of larger particles than French-process oxide. They are also needle-like crystals rather than the round, amorphous particles of French-process oxide. In recent years it has been found that particle size and type may be controlled by rate of heating so either process can make either product."⁽¹⁾

In Canada, two variations of the French process are used, one of which is the standard method using crucibles. The other uses a rotary kiln developed in Canada. The rotary kiln or Cornillat process yields a product which has larger, needlelike crystals. In some respects the product produced by the Cornillat rotary kiln resembles that of the American process.

Zinc oxide contains slightly more than 81 per cent zinc, which was said to account for approximately 85 per cent of the total cost of producing the product.⁽²⁾ Zinc metal of various grades can be used in the French process. However, in the rotary kiln it is difficult, or impossible, to remove lead impurities which may be present in the zinc metal; as a result, a purer grade of zinc must be used in this process if it is desired to obtain an end product which is essentially free of lead. In the other variation of the indirect process the lead content of the zinc metal does not affect the lead content of the end product to nearly the same extent; thus in the crucible process the Prime Western grade of zinc, whose maximum lead content is 1.60 per cent, is commonly used, whereas in the rotary kiln process either High Grade (maximum lead content 0.07 per cent) or Special High Grade (maximum lead content 0.006 per cent) or a mixture of one of these and Prime Western is more commonly used. High grade is also known as Electrolytic grade.

Prime Western costs less than either of the other grades but the yield of zinc oxide is slightly lower. At the public hearing, in late November 1960, the Canadian zinc oxide producers said High Grade usually cost 60 cents more a hundredweight than Prime Western zinc.⁽³⁾

The yield of zinc oxide, per pound of zinc metal, varies slightly in accordance with the process that is used and the purity of the raw material, zinc metal. In Canada, the rotary kiln process gives the highest yield (and ordinarily uses the highest purity of metal); the more usual variant of the French process gives somewhat lower yields. Around 1957, the yields experienced by Canadian producers were as follows:

	<u>Zinc Used</u>	<u>Zinc Oxide obtained</u>
	pounds	
Rotary kiln	100	123
Crucible, Co. A	100	120
Crucible, Co. B	100	117 ^(a)

(a) This company used a certain amount of secondary metal, otherwise its yield would approximate that of company A

Source: Restrictive Trade Practices Commission, Report concerning the Production, Distribution and Sale of Zinc Oxide, 1958, p. 146

(1) Faith, Keyes and Clark, Industrial Chemicals, 1957, p. 812

(2) Transcript, Vol. 15, p. 2177

(3) Same, Vol. 15, p. 2173-4

The Industry

Three companies produce zinc oxide in Canada: Zinc Oxide Company of Canada Limited (Zoco), at Montreal, Quebec; Durham Industries Canada Limited (Durham), wholly owned by Zoco, also at Montreal, and Canadian Felling Zinc Oxide Limited (Felling), at Milton, Ontario. Zoco came into operation in 1933 with a plant capacity of 8,000 to 10,000 tons annually, about twice as much as was being imported at that time. The capacity was approximately doubled during the second World War to about 20,000 tons annually. In 1960, when Zoco moved to new premises, capacity was reduced to 15,000 tons annually, about one and one-half times the total requirements of the domestic market. Zoco has used the Cornillat rotary kiln process since its establishment.

Until 1947 Zoco was the only Canadian producer of zinc oxide. In 1947, Durham Industries Canada Limited was established at Cap-de-la-Madeleine, Quebec, but moved to Montreal in 1949. The company used the crucible type of indirect process and had a plant capacity for about 10,000 tons of zinc oxide annually. In May, 1955, Zoco acquired ownership of Durham, after a price war which is discussed in the 1958 report on the zinc oxide industry, by the Restrictive Trade Practices Commission. (This report will hereafter be referred to as the "Combines Report".)

The third Canadian producer, Felling, established a plant at Milton, Ontario, in 1954. This plant had a capacity of approximately 3,500 tons per year, using the crucible indirect process. In 1961, the company was acquired by the Pigment and Chemical Company Limited, of Montreal.

Thus the total capacity of Canadian producers is for about 30,000 tons annually of which Zoco and Durham together account for about 90 per cent. In 1957 and 1958, the latest years for which published data are available, combined sales of Zoco and Durham were about three-quarters of the total domestic and export sales of the Canadian industry.

At the public hearing, in 1960, it was said that the companies employed a total of 60 to 70 persons.⁽¹⁾ The Combines Report indicates that zinc oxide production does not require a particularly large capital investment. For example, Canadian Felling was established in 1954, at a cost of \$93,900 or about \$27 per ton of annual capacity.⁽²⁾ Durham was established with an issue of 5,000 shares each of \$100 par value, or about \$50 per ton of annual capacity.⁽³⁾ Zoco, which was established in rented premises until 1960, issued 1200 shares with a par value of \$100 to bring its plant into operation, or about \$12 to \$15 per ton of annual capacity.⁽⁴⁾

Except for the war years and one or two years after, the Canadian industry has operated much below its rated capacity. As

(1) Transcript, Vol. 15, p. 2142

(2) Combines Report, p. 149

(3) Same, p. 41

(4) Same, p. 35

already indicated, when Zoco established its plant in 1933, the rated capacity was twice the amount that was being used domestically. When the Durham plant was moved to Montreal in 1949, Canadian capacity was for about 30,000 tons but total sales of the two companies were considerably less than half this amount. Published data on production are available only for the period 1945 to 1956 inclusive. During this period both Zoco and Durham were in operation but in no year in this period did either plant operate anywhere close to rated capacity and in most years both plants produced at considerably less than 50 per cent of capacity.

Production of Zinc Oxide in Canada, by Individual Company,
Selected Years, 1945-56

	<u>Zoco</u>	<u>Durham</u>	<u>Canadian Felling</u>	<u>Total</u>
		- tons -		
1945	15,150	-	-	15,150
1947	18,000	904	-	18,904
1949	4,200	2,948	-	7,148
1951	6,900	5,902	-	12,802
1953	5,500	4,194	-	9,694
1955	6,500	3,021	963	10,484
1956	7,099	2,254	1,570	10,923

Source: Combines Report, p. 165

However, the fact that they operated far below rated capacity did not mean that the industry, as a whole, was unprofitable. A financial review of the operations of Zoco and Durham is given in the Combines Report. Durham's operations are reviewed as follows:

"Operations of Durham Industries were generally unprofitable, as losses were encountered in all but a few years following the establishment of the company. According to the evidence ... based on a review of the company's history after its acquisition by Zoco [May, 1955], administrative overhead and factory staff were too large in relation to the scale of operations ... and contributed to unprofitable operations."(1)

Zoco's history during this time was quite different. The Report states:

"the financial record of ZOCO was reviewed in some detail for the years 1945 to 1955 inclusive. Throughout that period the Company was, apparently, in a sound financial position and enjoyed substantial earnings. For the years 1945-55 inclusive, dividends totalling in value \$960 per

(1) Combines Report, 1958, p. 38

common share were paid out and of this amount more than \$632 per share was received in cash by the shareholders... Profits accumulated over the years enabled the Company to pay the shareholders substantial dividends in redeemable preferred shares. In six of the eleven years reviewed the net income of Zoco (after taxes) exceeded the capital cost value before depreciation, of the assets employed in the production of zinc oxide in those years, and in each of the eleven years it was equal to several multiples of the depreciated assets for the corresponding years."⁽¹⁾

The Market

In the five years, 1959-63, Canadian consumption has varied between 10,000 and nearly 12,000 tons annually, with a value of approximately \$3 million annually. There appears, therefore, to have been little or no growth since the mid-1950's. The quantity absorbed by the domestic market has been relatively stable for some years in spite of the substantial growth of the two major consuming industries, paints and rubber products, which together, account for about two thirds of the market demand.

Consumption of Zinc Oxide, by Selected Industries,
1961, 1962 and 1963

	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1961</u>	<u>1962</u>	Estim. ^(a) <u>1963</u>
	-	tons -	-	-	\$'000	-
Paints	2,130	2,070	1,944	611	597	562
Other Chemical Use	<u>349</u>	<u>432</u>	<u>390</u>	<u>105</u>	<u>124</u>	<u>113</u>
Total Chemical	2,479	2,502	2,334	715	721	675
Rubber	4,703	5,096	5,495	1,288	1,309	1,412
Textiles	2,700 ^(b)	3,134 ^(b)	3,161 ^(b)	734	805	812
Lino. & Electric Cable	<u>506</u>	<u>519</u>	<u>530</u>	<u>143</u>	<u>146</u>	<u>149</u>
Total Above ^(b)	10,388	11,251	11,520	2,880	2,981	3,048

(a) Using average value of preceding year

(b) Estimated

Source: D.B.S., Various Publications; Canadian Chemical Processing; Chemistry in Canada

The major uses of zinc oxide are for rubber and paints. At one time zinc oxide was the principal white pigment used in paints, rubber and in other applications. However, titanium dioxide has largely displaced zinc oxide in pigmentation and the product is now used mainly for the other properties which it imparts. The rubber industry, which consumes about 50 per cent of the zinc oxide used in Canada, utilizes the chemical as an activator and accelerator in the vulcanizing process.

(1) Combines Report, 1958, p. 3

The paint industry, which consumes about 20 per cent of the Canadian total, uses zinc oxide to increase the durability and preservative characteristics of paints, particularly of exterior paints and enamels.

The market for zinc oxide is concentrated largely in Ontario and Quebec and all the major consumers are located in the complex of secondary industry which centres on Toronto and Montreal. This circumstance is reflected in the location of the oxide producers, two of whom are located in Montreal and the other near Toronto. A few relatively small consumers, mainly paint manufacturers, are located outside these areas and in this connection the producers said that they have encountered strong import competition in such distant areas as Newfoundland and British Columbia.⁽¹⁾

Foreign Trade

The production capacity of the Canadian zinc oxide industry has been much larger than the size of the domestic market ever since the first plant was established in 1933. As a result, exports have been a matter of concern to the industry in providing a larger market for its output. In the first few years after the end of World War II exports were substantial. In each of the three years, 1945-47, they were about 40 per cent or more of total sales and averaged about 6,800 tons annually. Exports declined after 1950, and in the next 11 years, 1951-61, they varied between 550 tons and 1,500 tons annually. In 1962 they increased sharply from 556 tons to almost 2,000 tons. Since 1963, only exports to the U.S.A. are known; these approached the early post-war level, with exports of 4,000 tons in 1963 and 3,400 tons, valued at \$886,000 in 1964.

Exports and Imports of Zinc Oxide, Selected Years, 1945-63

	Exports			Imports		
	tons	\$'000	\$per cwt.	tons	\$'000	\$per cwt.
1945	5,925 ^(a)	858 ^(a)	7.24	1,168	180	7.71
1947	7,500 ^(a)	1,842 ^(a)	12.28	2,205	478	10.83
1949	488 ^(a)	148 ^(a)	15.16	1,094	270	12.32
1954	1,190	271	11.39	1,035	262	12.67
1957	1,035	274	13.25	718	197	13.70
1960	723	187	12.93	759	201	13.27
1961	556	137	12.30	2,239	455	10.16
1962	1,751	425	12.15	2,736	577	10.54
1963	4,014 ^(b)	980 ^(b)	12.20 ^(b)	2,232	458	10.27
1964	3,376 ^(b)	886 ^(b)	13.12 ^(b)	1,170	273	11.68

(a) From Combines Report

(b) U.S. Imports from Canada, s.c. 8411000, converted to Canadian funds

Source: D.B.S., Trade of Canada, Imports, s.c. 8193; Trade of Canada, Exports, s.c. 8225, s.c. 40221

(1) Transcript, Vol. 15, p. 2145

During most of the period since 1945 exports exceeded imports. In two of the recent years, 1961 and 1962, imports exceeded exports, but in 1963 and 1964 the industry again achieved a substantial export balance. Almost all exports are to the U.S.A. and, until 1961, the U.S.A. supplied between 80 and 90 per cent of Canadian imports. In this period, imports from the U.K. exceeded 200 tons in only four of the sixteen years, and exceeded 500 tons only in 1953. However, in 1961 imports from Britain increased to 1,445 tons, and the U.K. was the major external supplier in 1962 and 1963 as well. As a result of this change in source of supply, the average value of imports declined from about 13 cents per pound to about 10 cents. In 1964 total imports declined sharply with imports from the U.K. being only 400 tons compared with 1,200 tons in 1963.

For some years before 1961, imports were only about seven per cent of Canadian use. However, with the sharp increases of imports, in 1961, 1962 and 1963 imports were about 20 per cent of estimated Canadian use. In 1964 the reduced imports were probably only ten per cent of Canadian consumption. In 1962 export sales offset some of the impact of imports on Canadian producers; in 1963 and 1964 exports exceeded imports by substantial amounts.

The distribution of imports, by region of entry, remained about the same in 1961 and 1962, as before; Ontario and Quebec continued to account for about 94 per cent of imports; in 1963 these two provinces accounted for 98 per cent of imports. Most of the increased imports from the U.K. which occurred in 1961, 1962 and 1963 were into Quebec, although there was also an increase in imports into Ontario in 1962 and in 1963.

Statements made at the public hearing suggested that Canadian exports to the U.S.A. were largely of the pharmaceutical grade. In this connection, the spokesman for the producers said:

"The zinc oxide produced in Canada is of a quality that will meet the specifications laid down by the United States pharmaceutical association. The American process with relation to zinc oxide doesn't necessarily meet these specifications. There is, therefore, in the United States a premium for the pharmaceutical grade. Our standard grade, being able to meet these specifications, puts us in a competitive position price-wise on that commodity."(1)

The average value of exports from Canada to the U.S.A. suggests that most of the exports to that country are at the published prices for pigment grades of zinc oxide, although they may be used for other purposes or for pigments which require a purer grade of zinc oxide.

The industry spokesman estimated that most imports from the U.S.A. were for use in formulations of Canadian branch plants of U.S. companies.(2) In reply to a question, he said:

(1) Transcript, Vol. 15, p. 2170

(2) Same, Vol. 15, p. 2145

"there has been a feeling that the United States produced a specialty product that has found its way into this market [Canada]. We specify that we can meet the needs of the users of that product, but the fact is that there have been importations from the United States in respect of a special kind of zinc oxide."(1)

The spokesman for the rubber industry informed the Board that from five to ten per cent of his industry's consumption of zinc oxide was imported from the U.S.A. This would account for a large proportion of the imports originating in that country. He explained this in the following terms:

"I am informed that in the view of the rubber manufacturers who do import zinc oxide from the United States, their chemists definitely consider it essential and not replaceable by Canadian supplies. As I say, the quantities are limited; they are used in special applications and I understand foam rubber is one of those main uses."(2)

At a later hearing in October 1962, a Netherlands company which supplies the Canadian rubber industry said its product was made by the American process and was not available from Canadian production. The company claimed that the product which it exported to Canada was of a grade specially made for use in rubber.(3) Imports from the Netherlands occurred in four years, 1960, 1961, 1963 and 1964, and were of significance only in 1961 (86 tons) and 1963 (256 tons), when their average value per hundredweight was \$8.94 and \$8.85, respectively, very much lower than the average value of imports from the U.S.A. or exports from Canada. These data suggest that price was a major consideration for the companies which imported the product. It is noteworthy that the average value of imports from the U.K., in those years, was also low and apparently accounted for the sharp increase in imports from Britain.

Average Value of Imports of Zinc Oxide from the U.K., U.S.A. and the Netherlands, and of Exports from Canada 1958-64

	<u>Nether-</u> <u>lands</u>	<u>U.K.</u> - \$ per 100 pounds -	<u>U.S.A.</u>	<u>Exports</u> <u>from</u> <u>Canada</u>
1958	-	9.19	14.06	12.96
1959	-	9.87	13.79	13.13
1960	10.17	11.53	13.76	12.93
1961	8.94	9.14	12.48	12.30
1962	-	9.47	13.40	12.15 ^(a)
1963	8.85	8.50	13.61	12.21 ^(a)
1964	12.51	8.65	13.81	13.12

(a) U.S. imports from Canada, s.c. 8411000, converted to Canadian funds

Source: Derived from D.B.S., Trade of Canada, Imports, s.c. 8193

(1) Transcript, Vol. 15, p. 2163

(2) Same, Vol. 16, p. 2278

(3) Same, Vol. 98, p. 14869

Although imports in earlier years may have been of grades or qualities which were not produced in Canada, the sharp increase of imports from the U.K. did not affect the volume of imports from other countries. Therefore, it is likely that a large part of the additional imports from the U.K., which occurred in 1961, 1962 and 1963, were competitive with zinc oxide sold by the Canadian producers. Average imports from the U.K. in the three years, 1958 to 1960, were 135 tons annually; in the three years, 1961 to 1963, they averaged 1,547 tons annually, indicating a probable displacement of similar amounts of Canadian product.

Pricing Policy and Prices

In Canada, zinc oxide is sold in a number of grades, and prices are on a delivered basis to the principal consuming locations.⁽¹⁾ The different grades vary in such characteristics as their purity, particle size, crystal structure and other features, and the presence of particular impurities such as lead. Although similar grades may be available from each of the Canadian producers, each company has its own grade designations and each is apparently prepared to produce a particular product in accordance with customers' specifications. The differentials in prices between the various grades sold by a company tend to become established over time and ordinarily the prices of all grades are changed simultaneously.

The grades which are used to establish base prices constitute a relatively large proportion of each company's sales. Some of the other grades are also sold at the base price although small price premiums may be added. At the time of the hearing in late 1960, the companies indicated that the pharmaceutical grade was about two cents a pound more than the base price. Around 1957, the premium varied from about 1.75 cents to 4.00 cents a pound for this grade.

Canadian prices are not published. The table which follows shows prices in the U.S.A. of representative grades of zinc oxide.

Prices of Zinc Oxide in the U.S.A.

In Carload or Truckload Lots, Selected Years, 1952-64

	<u>American Process, Lead-free, in bags</u>		<u>French Process, Green Seal, in bags</u>		<u>Zinc Oxide, U.S.P., in Drums</u>	
	<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>
	- U.S. cents per pound -					
1952	17.6	14.25	19.35	16.0	20.85	17.5
1954	13.5	13.5	15.25	15.25	16.75	16.75
1956	14.5	14.0	15.75	15.75	17.25	17.25
1958	14.5	14.5	16.25	15.75	17.25	17.25
1960	14.5	14.5	16.25	16.25	18.25	18.25
1962	13.0	13.0	14.75	14.75	16.25	16.25
1963	13.0	13.0	14.75	14.75	16.25	16.25
1964	14.75	13.5	16.50	15.25	18.00	16.25

Note: Prices are delivered to destination 1952 to 1961, and f.o.b. plant thereafter

Source: Oil, Paint and Drug Reporter

(1) Transcript, Vol. 16, p. 2203-4

As the table indicates, in the U.S.A., French process zinc oxide is ordinarily priced at about 1.75 cents a pound more than American process product, even for the pigment grade. The pharmaceutical grade is priced at one to two cents a pound more than the French process pigment grade, and about three cents a pound more than the American process pigment grade.

Because zinc metal constitutes about 85 per cent of the cost of producing zinc oxide, prices of zinc oxide are closely related to the price of zinc and usually change when the price of zinc metal changes. As was mentioned earlier, the two principal grades of zinc used by Canadian zinc oxide producers are Prime Western and High Grade (Electrolytic). In general, Durham and Canadian Felling have tended to use Prime Western while Zoco has used the High Grade grade.⁽¹⁾ However, each of the companies can also use other grades of zinc in the production of zinc oxide, although there may be disadvantages arising out of this.

In the U.S.A., prices of Prime Western zinc are quoted f.o.b. East St. Louis, Illinois, with a maximum freight charge to purchasers of 40 cents per hundredweight. High Grade is sold at a premium of \$1.35 per 100 pounds over Prime Western and Special High Grade, a purer zinc, is \$1.75 more per 100 pounds than Prime Western. However, both of the latter grades are sold on a delivered basis. A large part of the zinc sold in the U.S.A. would incur more than 40 cents per hundredweight freight and as a result the effective premium on High Grade would be less than \$1.35, and in some cases much less.

In the U.K., prices are quoted daily on the London Metal Exchange, for zinc of many grades, originating in many parts of the world.

In Canada, zinc is sold on a delivered basis at Montreal and Toronto. High Grade (Electrolytic) has been priced at a premium of 60 cents per hundred pounds above the price of Prime Western, since 1957. Delivered prices in Canada are generally about the same as those in the U.S.A., but are usually higher than those in the U.K.

Although prices of zinc in the U.K. are usually lower than those for equivalent grades in Canada, most of the time Canadian purchasers can buy Canadian zinc at lower delivered prices than they can obtain it by importing it from the U.K. However, it was said that about one-quarter of the time Canadian zinc re-imported from the U.K. could be laid down at Montreal or Toronto at lower prices than it could be purchased from the Canadian refiners.⁽²⁾ The higher cost of zinc was cited by the Canadian zinc oxide producers as the major disadvantage under which they operated.

However, although there are times when zinc could be imported more cheaply from the U.K. than it could be purchased from the Canadian suppliers, such an act would have certain disadvantages. A spokesman for the zinc oxide producers stated that purchases on the London Metal Exchange took six weeks for delivery and involved the risk of changes in prices between the dates of purchase and delivery. He added:

(1) Transcript, Vol. 15, p. 2173-5

(2) Same, Vol. 15, p. 2180

"Our normal procedure is that when the customer calls us up and places an order with us for, say, 50 pounds of zinc oxide we immediately turn around and purchase 40 pounds of metal. If we did not adopt this policy, then we would be gambling on the metal market..."⁽¹⁾

At the 1960 hearing, the spokesman for the Canadian producers of zinc oxide said that one of the two Canadian refiners of zinc, then in operation, was selling High Grade at the same price as Prime Western.⁽²⁾ This would be of some advantage to Zoco, but, as the spokesman for Canadian Felling indicated, it was no advantage to his company.⁽³⁾ Because Durham uses essentially the same process as Felling, there was probably no advantage to that company either.

Tariff Considerations

Zinc oxide is entered under tariff item 242.

<u>Item 242 (in part)</u>	<u>British</u>	<u>Most-</u>
	<u>Preferential</u>	<u>Favoured-</u>
	<u>Tariff</u>	<u>Nation</u>
		<u>Tariff</u>
Dry red lead; ... and zinc oxide such as zinc white and lithopone;.....	Free	12½ p.c.

In August 1960, the Canadian producers of zinc oxide proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., for zinc oxide. However, shortly before the public hearing on the product, on November 23, 1960, they changed the proposed rates to 30 p.c., B.P. and 40 p.c., M.F.N.⁽⁴⁾ The companies which made these rate proposals were: Zinc Oxide Company of Canada Limited of Montreal; its wholly owned subsidiary, Durham Industries Canada Limited, also at Montreal, and Canadian Felling Zinc Oxide Limited, of Milton, Ontario.

At the hearings of November 23, 1960, and October 19, 1962, the Rubber Association of Canada strongly opposed any increase in the existing rates;⁽⁵⁾ the Canadian Paint Varnish and Lacquer Association questioned "the need for an increase of this magnitude";⁽⁶⁾ and Courtaulds Canada Limited also opposed the rates which had been requested.⁽⁷⁾ When the paint industry repeated its opposition at the hearing of October 11, 1962, two years later, its spokesman suggested that rates of 15 p.c., B.P. and 20 p.c., M.F.N., would be more reasonable.

(1) Transcript, Vol. 16, p. 2235

(2) Same, Vol. 16, p. 2251

(3) Same, Vol. 16, p. 2252

(4) Same, Vol. 15, p. 2137

(5) Same, Vol. 16, p. 2284; Vol. 98, p. 14870

(6) Same, Vol. 16, p. 2300; Vol. 93, p. 14040

(7) Same, Vol. 16, p. 2326

At an earlier hearing (September 15, 1960) Naugatuck Chemicals Division of Dominion Rubber Limited indicated its interest in zinc oxide and informed the Board that it took no issue with the rates which were being proposed by chemical producers, providing that the Board also recommended those rates which the company would propose for the products which it manufactures.⁽¹⁾

The Canadian Federation of Agriculture listed zinc oxide as a material used in the manufacture of animal or poultry feeds. The Federation took the position that all materials which entered into the manufacture of products used by Agriculture should be free of duty under all Tariffs, in end-use items designed for this purpose. The Federation reiterated its stand at other hearings dealing with end-use items.⁽²⁾

The Canadian Pulp and Paper Association listed zinc oxide as a raw material used by its members and stated that it strongly opposed "any revision which would result in an increase over current tariff rates ... in respect of chemicals used by the pulp and paper industry." This position was restated at the hearing of September 10, 1962.⁽³⁾

The Canadian Pharmaceutical Manufacturers Association listed zinc oxide as one of the more important raw materials used by its members, and proposed an end-use item, for chemicals used in pharmaceuticals, with rates of 15 p.c., B.P. and 20 p.c., M.F.N., when made in Canada.⁽⁴⁾

At the hearing of October 19, 1962, a Netherlands company, N.V. Maastrichtse Zinkwit-Maatschappij, of Eysden, urged that there be no increase in duties on zinc oxide.⁽⁵⁾

The Industry Committee recommended that the Board create a new tariff item worded like heading 28.19 of the Brussels Tariff Nomenclature, "zinc oxide and zinc peroxide."⁽⁶⁾

Thus there were three rate proposals before the Board: 30 p.c., B.P. and 40 p.c., M.F.N., proposed by the manufacturers; 15 p.c., B.P. and 20 p.c., M.F.N., recommended by the pharmaceutical manufacturers when the chemical is used in the manufacture of pharmaceutical products, and free entry under all Tariffs in end-use items relating to materials used by farmers. The submissions of the Rubber Association, the Pulp and Paper Association, the Paint and Varnish Association and the Netherlands manufacturer opposed any increase in rates.

To a large degree, the zinc oxide producers based the support of their proposed rates on their higher cost of zinc metal relative to zinc oxide producers in the U.K. and continental Europe. The manufacturers' spokesman referred to low-priced offerings of European zinc oxide in Canada and claimed that this situation was likely to continue, with a consequent loss of sales by Canadian producers.

(1) Transcript, Vol. 6, p. 899-900

(2) Same, Vol. 5, p. 737; Vol. 86, p. 13026; Vol. 110, p. 16618

(3) Same, Vol. 36, p. 5246; Vol. 85, p. 13005

(4) Same, Vol. 87, p. 13321

(5) Same, Vol. 98, p. 14870

(6) Same, Vol. 15, p. 2131

He also said that costs of labour were higher in Canada, that the scale of production was smaller and that unit costs of the French process were higher than in the American process. He submitted various calculations to indicate that the disadvantage of his clients relative to U.K. producers was of the order of 28 per cent and relative to other European producers, about 39 per cent.

Until 1961, Canadian producers dominated the Canadian market and supplied about 93 per cent of the Canadian demand. Zoco and its wholly-owned subsidiary, Durham Industries, accounted for most of the sales. In the five years before 1961, imports averaged 700 tons annually of which about 600 tons were from the U.S.A. and 100 tons from the U.K. Imports from other countries were negligible. Of the 600 tons imported annually from the U.S.A., about 500 tons were said, by the Canadian manufacturers, to be of special grades for particular uses. Therefore, the imports which were most directly competitive with Canadian production appear to have been about 200 tons annually. During this period (1956-60) the Canadian market consumed about 10,000 tons annually of zinc oxide so that imports of other than the special grades were supplying about two per cent of Canadian demand. Part of these competitive imports would be to consumers in Newfoundland, British Columbia and the Prairies. The high cost of the overland haul to these regions was cited at the hearings as a disadvantage in meeting the competition of imported zinc oxide.

In 1961, 1962 and 1963, imports from the U.K. increased to an average of about 1,500 tons annually from the previous average of only 100 tons per year. Imports from other European countries, particularly the Netherlands, also increased but were not comparable in volume with those from the U.K. Imports from the U.S.A. remained at approximately their previous level. The increase in imports from the U.K. and the Netherlands may have resulted, at least in part, from lower prices. However, in previous years U.K. prices appear to have been as low, relative to Canadian prices, as in those years without any apparent effect on the volume of imports.

It is noteworthy that in two of these three years, 1962 and 1963, Canadian exports were also unusually high. In fact, exports in 1963⁽¹⁾ were almost double the quantity imported, with the average value of exports \$12.20 a hundredweight compared with an average of \$8.50 per hundred pounds for imports from the U.K. and \$8.85 per hundredweight for imports from the Netherlands.

In 1964, imports declined to more typical levels. However, exports remained high and were approximately treble the imports of 1,170 tons. In 1964, exports probably accounted for about 30 per cent of the sales by Canadian producers.

As noted earlier, Canadian consumers purchase zinc metal at approximately the same price as consumers in the U.S.A., but usually at higher prices than U.K. producers. Although the price in London would, at times, make it cheaper to import the metal from the U.K., Canadian producers are reluctant to risk the possibility of changes in

(1) 1963 data are incomplete, in that only exports to the U.S.A. are available

price between the time of purchase and the time of delivery, and prefer the convenience of being able to purchase zinc on short notice, sometimes in very small quantities, from the Canadian refiners of the metal. The Canadian manufacturers of zinc oxide said that they generally purchase zinc oxide on short notice and the six weeks delay required for delivery from the U.K. was not suited to their pattern of buying.

The claim of Canadian producers that their process was efficient, though higher in cost than the American process, is difficult to assess. In the U.S.A. the published price for the product of the French process is ordinarily about \$1.75 per 100 pounds higher than that produced by the American process. In 1964, the premium for the French process pigment grade over the American process pigment grade zinc oxide was 13 to 18 per cent.

These data tend to corroborate the claim of the producers that the French process is the more costly. However, the premium that is paid for the product produced by the French process would appear to reflect the higher costs of manufacture. Moreover, the Canadian producers claimed that their product would meet the specifications of the U.S.P. In 1964 this grade was priced 20 to 22 per cent higher than the American process pigment grade, in the U.S.A. In the past ten years, 1955-64, Canadian exports to the U.S.A. have been greater than imports from the U.S.A., in every year but two. In the past three years, 1962-64, Canadian exports were nearly 4.5 times as much as imports from that country.

The lower average values of imports from the U.K. and Western Europe do suggest a more disadvantageous situation, at least on site at the factory. Although the Canadian producers may be at some disadvantage relative to the U.K. in the purchase of zinc, they have the advantage of being located in the Montreal and Toronto areas in which about 90 per cent of the Canadian market for zinc oxide is concentrated. In addition to the less tangible advantages which their location gives them in terms of customer service, it also bestows the advantage of lower freight costs on shipping the finished product to consumers. At the time of the hearing, for example, the freight advantage to Canadian Felling Zinc on sales in the Toronto area was about one cent per pound compared with shipments from Europe; this amounted to about $7\frac{1}{2}$ per cent of the selling price of zinc oxide in Canada at that time. Similarly, Canadian producers have a freight advantage in these areas over shipments from the U.S.A.

The consumers of zinc oxide opposed the manufacturers' proposals mainly on the grounds of the probable effect of increased costs on their ability to compete with foreign manufacturers of the products into whose manufacture zinc oxide entered. The spokesmen for the rubber and paint industries, which together account for about two-thirds of Canadian consumption, both claimed that the products produced by their industries would be placed at a serious disadvantage relative to imports. The spokesman for Courtaulds, a major producer of textiles, said that the probable additional cost that would result from the proposed increase in rates of duty would exceed the profits on the end product using the chemical.

The buyers of zinc oxide protested that the Canadian manufacturers had apparently not made any great effort to secure zinc from foreign sources at lower prices. The spokesman for Courtaulds pointed out that the zinc oxide manufacturers had made no submission to the Tariff Board when the Board was considering the tariffs relating to zinc (Reference No. 122), although the refiners of zinc appeared at that hearing to urge the Board not to increase the rates on zinc metal.

His position was stated in the following terms:

"We particularly note ... that they [the manufacturers of zinc oxide] appear to merely accept the premium price which they are paying for zinc, pointing to the benefits to the Canadian zinc producers ... They say they are interested in getting low cost zinc. We suggest that this is an interest which should be pursued more vigorously. As consumers of zinc oxide we cannot merely accept a statement that our suppliers are paying a premium over world prices for their metal, as being justification for the duty rates which they are requesting on their products." (1)

He also said:

"Attention has also been drawn by the zinc oxide industry to Canadian import duties on zinc. Under item 345a these are $\frac{1}{2}$ cent British Preferential, 1 cent per pound Most-Favoured-Nation. These rates account for only a portion of the price differentials previously mentioned, but if in fact the Canadian Zinc oxide industry is suffering from inability to obtain zinc from Canadian sources of supply as cheaply as foreign competitors obtain their zinc ... perhaps one remedy lies in reduction of the Canadian duties on zinc ... Even with existing duty rates on zinc, if the lower cost to which the zinc oxide industry refers, and on which it has based so much of its case, is a regularly available price, we fail to understand why the Canadian industry has not taken advantage of world zinc prices. They do not need to gamble on the metal market to do so. There is a well established market mechanism for avoiding this." (2)

ZINC PEROXIDE - B.T.N. 28.19

At the public hearing on November 23, 1960, the spokesman for the Industry Committee said,

"Zinc peroxide was reported [to the Committee] by only two companies [as manufactured products, raw materials or resale items] and neither appear to have regarded it as sufficiently important to make any specific recommendation for its tariff treatment. As far as the Committee is aware, zinc peroxide has very little commercial significance. Its use is believed

(1) Transcript, Vol. 16, p. 2321

(2) Same, Vol. 16, p. 2319-20

to be limited to serving as an ingredient of certain pharmaceutical or cosmetic preparations. In these circumstances, the Committee suggests that zinc peroxide does not warrant classification or duty treatment different from that provided for heading no. 28.19 15 p.c., B.P. and 20 p.c., M.F.N."(1)

The Canadian Pharmaceutical Manufacturers Association included zinc peroxide as one of a list of relatively unimportant chemicals which its members used. The Association recommended that products used in the manufacture of chemicals should be dutiable at Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, when not made in Canada.(2)

Zinc peroxide is now entered at these rates under item 208t.

ALUMINUM OXIDE AND HYDROXIDE; ARTIFICIAL CORUNDUM - B.T.N. 28.20

In the Brussels Tariff Nomenclature, heading 28.20 relates to aluminum oxide (anhydrous or calcined alumina) and to aluminum hydroxide (hydrated alumina). The heading excludes bauxite "whether or not washed and calcined, but not chemically purified." Bauxite, a mixture containing aluminum hydroxide, is classified under heading 26.01, "Metallic ores and concentrates and roasted iron pyrites."(3)

"Artificial corundum is formed by fusing aluminum oxide in an electric furnace. It is put up in small pieces or masses, crushed or in grains ..." (4) It is classified in B.T.N. heading 28.20.

In the Canadian Customs Tariff item 211, "alumina", relates to both aluminum oxide and aluminum hydroxide, regardless of their purity or the process used in their production. The item provides for free entry under all Tariffs. Artificial corundum, in bulk, is entered duty free under tariff item 669, "emery, corundum and garnet, in bulk, crushed or ground," and under item 671, "artificial abrasive grains, crushed or ground." Tariff items 211, 669 and 671 are outside the terms of Reference 120.

At the public hearing in November 1960, the Industry Committee spokesman noted that items 211 and 669 had not been referred by the Minister of Finance to the Tariff Board for study. He said:

"The Committee does, however, believe that there are substantial benefits to be derived by retaining the complete structure of Brussels Nomenclature for inorganic chemicals. We therefore propose that for purposes of classification, the heading 28.20 should be used with the same wording and dimensions of meaning as it has in Brussels Nomenclature ...

(1) Transcript, Vol. 15, p. 2132

(2) Same, Vol. 87, p. 13289, 13321

(3) Explanatory Notes to the Brussels Nomenclature 1955, Vol. 1, p. 164-5

(4) Same, p. 164

"As rates of O-O have been recommended for aluminum hydroxide and are equivalent to the Free-Free tariffs now applying to aluminum oxide by item No. 211 and to corundum by item No. 669, the Committee concluded that with rates of O-O, B.T.N. heading No. 28.20 in its entirety would be an appropriate item for the tariff and that in so far as aluminum oxide and artificial corundum were concerned, this should represent only a relocation of their existing tariffs."⁽¹⁾

However, the scope of item 211 exceeds that of B.T.N. heading 28.20 and therefore the inclusion of an item worded like heading 28.20 would not permit deletion of existing item 211 unless provision was also made for the other products classified under it. Alternatively, items 211, 669 and 671 might be retained and an "n.o.p." (not otherwise provided for) provision be made under an item like heading 28.20 so as not to attract products from these existing items not in Reference 120.

Although the tariff items which relate to aluminum oxide and hydroxide are outside the scope of Reference 120, representations were made on behalf of these products.

The Canadian Pulp and Paper Association said that aluminum oxide was a material used by its members and that the Association "strongly oppose any revision which would result in an increase over current tariff rates, either now or in the future, in respect of chemicals used by the pulp and paper industry."⁽²⁾

The Canadian Pharmaceutical Manufacturers Association listed aluminum oxide as one of its members' more important raw materials, and aluminum hydroxide as one of relatively little importance. It recommended that chemicals used in the manufacture of pharmaceuticals should be entered at rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, while they are not made in Canada.⁽³⁾

Because the substantive tariff items are outside the terms of Reference 120, and because the intent of the Industry Committee's proposal was simply to retain a consistent system of classification and not to affect rates of duty, the Board did not study the appropriateness of the rates applicable to the product.

CHROMIUM OXIDES AND HYDROXIDES - B.T.N. 28.21

Chromic Oxide

Chromic oxide, or chromium oxide green, is made in Canada by two manufacturers, Abbey Chemical Company and British Chrome and Chemicals Canada Limited. It is a fine amorphous powder with a characteristic green colour which is principally and widely used as a pigment. It is also used as a tanning agent for leather, as a source of chromium metal in certain metallurgical operations, as an oxidizing agent for aluminum and as a rust inhibitor.

(1) Transcript, Vol. 16, p. 2331-2

(2) Same, Vol. 36, p. 5246; Vol. 85, p. 13005

(3) Same, Vol. 87, p. 13321

Abbey Chemical estimated the Canadian market at 500 tons per year. At the price current in May 1962, this quantity of chromium oxide would be valued at approximately \$400,000. The company spokesman estimated that about two thirds of the use was pigmentary and about one-third metallurgical.⁽¹⁾ From this it would appear that consumption in other applications is small.

No published data are available. However, British Chrome and Chemicals informed the Board that imports originated in the U.S.A., Germany and Australia.

Chromium oxide is entered under item 246 "Oxides ... and colours, dry, n.o.p." at 12½ p.c., B.P. and 17½ p.c., M.F.N.

At the public hearing, in November 1960, no representations were made to the Board regarding chromium oxide. However, in February 1961, at the hearing on the raw material, sodium dichromate, British Chrome and Chemicals Limited said it would not object to rates of Free, B.P. and 15 p.c., M.F.N. for chromium oxide. The company did not make any further comment on these rates, at that time,⁽²⁾ but in a letter dated April 19, 1963, the company stated:

"Since Chromium Oxide became of a class or kind 'Made in Canada' on the 9th August 1962 we would recommend that the rates of duty be 15% B.P. and 20% M.F.N.

"Chromium Oxide manufactured in Canada has by necessity to be manufactured on [sic] small plants because of the small Canadian market and has to compete with material being manufactured in U.S.A., U.K. and Germany on large continuous process units.

"Because we feel that we are contributing to the overall economy of Canada we would like to have the Tariff protection already suggested above."

At the hearing in May 1962, Abbey Chemical presented a brief dealing mainly with the dichromate, when entered under temporary end-use tariff item 210f "materials, for use in the manufacture of chromium oxide." The company recommended rates of 15 p.c., B.P. and 20 p.c., M.F.N., for chromium oxide, when ruled to be made in Canada. Its spokesman said:

"If it is considered desirable to continue to produce Chromium Oxide Green in Canada, then certain conditions must exist. In the first place, protection should be given this product in the form of a 'Made in Canada' ruling at suggested rates of 15 per cent B.P. and 20 per cent M.F.N."⁽³⁾

The brief did not indicate why these rates were appropriate.

Chromium oxide was ruled to be made in Canada, effective August 9, 1962. This ruling did not affect the rates of duty for the product which is entered at rates of 12½ p.c., B.P. and 17½ p.c., M.F.N., under tariff item 246.

(1) Transcript, Vol. 80, p. 12194

(2) Same, Vol. 32, p. 4697

(3) Same, Vol. 80, p. 12195

Chromium Trioxide

Chromium trioxide is also widely, but wrongly, called chromic acid. Its principal uses are as an oxidizing agent in organic chemistry, in the manufacture of chemicals, anodizing metals, tanning and chromium plating.

Chromium trioxide is not made in Canada. The U.S.A. supplies about three-quarters of total requirements; the U.K. supplies most of the remainder, with regular small imports also coming from West Germany. Annual imports have been increasing since the late fifties; in 1964 they amounted to 2.0 million pounds valued at \$611,000.

Imports of Chromic Acid (Chromium Trioxide)
by Principal Country of Origin, 1958-63

<u>Year</u>	<u>United Kingdom</u>		<u>United States</u>		<u>Total</u>	
	'000 lb.	\$'000	'000 lb.	\$'000	'000 lb.	\$'000
1958	233	61	610	167	852	231
1959	196	52	939	254	1,143	308
1960	249	69	848	229	1,127	306
1961	283	78	987	276	1,304	364
1962	333	99	1,169	352	1,578	472
1963	360	116	1,276	385	1,761	532
1964	476	155	1,385	419	2,005	611

Source: D.B.S., Trade of Canada, Imports, s.c. 8026

At the public hearing, in November 1960, M. & T. Products of Canada Limited claimed to be the largest single user of the product in Canada. Though the company referred to chromium oxide, a later letter indicated that the reference should be to the trioxide. Its spokesman said the company purchased about 40 per cent of the chromium trioxide that was imported, and used it for the manufacture of electroplating compounds. About 70 per cent of these compounds were said to be used by the automobile industry.⁽¹⁾

The Canadian Color Makers Association informed the Board that its members used 2,000 pounds in 1958 and 6,000 pounds in 1959, valued at \$1,568 and \$4,140, respectively.

In the U.S.A., chromium trioxide is sold in drums, at works, freight equalized. The grade which represents most of the imports is the 99 $\frac{3}{4}$ per cent trioxide which has been priced at 29.5 cents per pound since 1957. The National Formulary grade is much more expensive, \$1.15 a pound.

In the U.S.A., about three quarters of the production is for treatment of metals; the remainder is for a variety of other uses and export. Chrome plating, copper stripping, aluminum anodizing and corrosion prevention are cited as the principal applications in metallurgy.⁽²⁾ Canadian consumption appears to follow a similar pattern.

(1) Transcript, Vol. 16, p. 2363

(2) Faith, Keyes and Clark, Industrial Chemicals, Second edition, 1957, p. 279

Tariff Considerations

Chromium trioxide is entered under tariff item 216, Free, B.P. and 15 p.c., M.F.N. If imported for use exclusively in the production of tin plate, it is free of duty under both the B.P. and M.F.N. Tariffs under an extract of item 216.

At the public hearing in November 1960, M. & T. Products of Canada Limited proposed "continuance of the present duty free B.P. and 15 per cent M.F.N. duty rates", until the product is made in Canada. The company supported the Industry Committee's proposal that when made in Canada, rates of 15 p.c., B.P. and 20 p.c., M.F.N. should apply.⁽¹⁾

Neither the company nor the Industry Committee indicated why these rates were appropriate specifically for chromium trioxide.

British Chrome and Chemicals Canada Limited urged that chromium trioxide should be free of duty under the B.P. Tariff and dutiable at 15 p.c. under the M.F.N. Tariff, until made in Canada. The company proposed that rates of 15 p.c., B.P. and 20 p.c., M.F.N., should apply when the product is made in Canada.⁽²⁾

At the hearing in May 1962, the spokesman for the Industry Committee proposed that the extract of tariff item 216 which applies to chromium trioxide (among other chemicals), for use in the production of tin plate be eliminated because no other representations had been made to the Board in support of its retention.⁽³⁾

The magnitude of imports under the extract of tariff item 216 is not known. However, at least part of the duty-free imports from M.F.N. countries would be under this item. In the five years, 1959-63, duty-free imports of chromic acid from M.F.N. countries averaged 197,000 pounds, valued at \$55,000 annually.

If the extract of item 216 were deleted, as recommended by the Industry Committee, chromium trioxide (and other chemicals) which are entered for use in the production of tin plate would, by the Committee's proposal, become subject to the duty of 15 p.c., M.F.N. recommended by M. & T. and British Chrome and Chemicals. The Industry Committee did not indicate why such a rate would be appropriate specifically for chromium trioxide.

The only other interest expressed in chromium trioxide was by the Canadian Pharmaceutical Manufacturers Association, as a product of minor economic importance used by its members. The Association requested that chemicals used in the manufacture of pharmaceutical products, should be dutiable at rates of Free, B.P. and 15 p.c., M.F.N. until they are made in Canada, unless otherwise provided for.⁽⁴⁾

No representations were made to the Board concerning any other products of heading 28.21.

(1) Transcript, Vol. 16, p. 2363-4; Letter dated May 8, 1964

(2) Same, Vol. 32, p. 4697

(3) Same, Vol. 80, p. 12199-200

(4) Same, Vol. 87, p. 13321

MANGANESE OXIDES - B.T.N. 28,22MANGANESE DIOXIDE

Manganese dioxide, the chemical, is a black crystalline material or an amorphous powder; it is not produced in Canada. The natural form is the mineral pyrolusite which is excluded from heading 28.22. Manganese ore occurs in Canada, but it is of low-grade and uneconomic to mine; Africa is its principal source. The prices that are published in the U.S.A. for manganese dioxide produced from African ore specify a content of 83 to 87 per cent of manganese dioxide.

The principal use of the chemical form of manganese dioxide is in the manufacture of batteries, but small quantities are also used in the production of manganese chemicals, in refining gold, the manufacture of pigments and dyes and other applications. By far the largest use of manganese dioxide ore is in the steel industry. The Department of Mines and Technical Surveys states that about 98 per cent of Canadian consumption of manganese ore is of the metallurgical grade and only two per cent is of the battery and chemical grade.

It further states:

"About 95 per cent of the world's output of manganese ore is used by the steel industry. The dry-battery industry accounts for three per cent and the chemical industry for the remaining two per cent.

The importance of manganese is due principally to its scavenging action in steelmaking furnaces since it is the cheapest material known for desulphurization and dephosphorization. In the proportion of one to two per cent, it increases strength and toughness in steel. In proportions of 12 to 14 per cent, it greatly increases toughness and resistance to wear and abrasion.

Electrolytic manganese, made in an electrolytic cell where the manganese is deposited on an electrode and stripped off as thin plates, is used in place of low-carbon ferromanganese to reduce the carbon content of stainless steels and thus eliminate the need for a carbon stabilizer. It serves the aluminum industry in the production of high-purity aluminum 'hardener' alloys; in brass mills it is added either as metal or as a 30-70 manganese-copper master alloy in the production of manganese bronzes ...

Metallurgical-grade Manganese Ore

Most of the manganese consumed by the steel industry is in the form of high-carbon ferromanganese. The remainder is in the form of low- and medium-carbon ferromanganese and of silicomanganese, spiegeleisen, manganese metal and ore in that order.

For making ferromanganese, the manganese-iron ratio should be 7:1 or more because the production capacity for the ferro-

plant is handicapped as this ratio drops. High silica is undesirable because it increases the quantity of slag, which is attended by a manganese loss. In preparing their furnace charges, ferromanganese producers prefer to blend commercial ores to their own specifications. Since no single ore is generally considered ideal, consumers usually purchase ore from more than one source.

General specifications for metallurgical-grade manganese ore are a minimum of 48 per cent manganese and maxima of seven per cent iron, eight per cent silica, 0.15 per cent phosphorus, six per cent alumina and one per cent zinc. The ore should be in hard lumps of less than four inches and not more than 12 per cent should pass a 20-mesh screen.

Battery-grade Manganese Ore

Manganese ore for dry-cell use must be pyrolusite (MnO_2) of not less than 75 per cent MnO_2 and not more than 1.5 per cent iron; it should be very low in arsenic, copper, zinc, nickel and cobalt. The physical properties of the oxide are also important. It should be porous and moderately hard.

Chemical-grade Manganese Ore

Chemical-grade manganese ore should contain at least 35 per cent manganese. It is used to make manganese sulphate and manganese fertilizer, and in the production of other salts for use in the glass, dye, paint, varnish and photographic industries."(1)

Canadian consumption of manganese by battery manufacturers was 2,159 tons in 1961 and 1,936 tons in 1962. The value of this consumption at users' plants, was \$442,000 in 1961 and \$395,000 in 1962. In contrast, Canadian consumption of the metallurgical grade of manganese amounted to 83,500 tons in 1962.

The information given at the hearing suggested that the physical characteristics of either the synthetic or natural manganese dioxide are very important in determining the suitability of the material for use in the manufacture of dry batteries. The kind and the proportions of synthetic and natural material used were said to affect the performance and life of the battery.

The manufacturers who made representations to the Board agreed that no other chemicals are substitutable for either the synthetic or natural product in the manufacture of dry batteries. They also agreed that manganese dioxide constitutes a major portion of their total raw material cost. The Burgess Battery Company indicated that consumption of the synthetic material is relatively small.(2) A spokesman for Union Carbide Canada Limited said his company had examined the economics of producing the synthetic material in Canada, but had found that the capital investment which would be required, of about \$400,000, would not be justified by the relatively small Canadian market.(3)

(1) Canadian Minerals Yearbook 1962, Manganese, p. 46

(2) Transcript, Vol. 16, p. 2349

(3) Same, Vol. 16, p. 2345

Tariff Considerations

Manganese dioxide ores and concentrates, when imported for the recovery of their metallic content, are entered under tariff item 329, duty-free under all Tariffs. Manganese dioxide ore concentrates, when imported for other purposes, and manganese dioxide, the chemical, are entered under tariff item 335, also duty-free under all Tariffs.

At the public hearing, on November 24, 1960, Union Carbide Canada Limited proposed that:

- "1. The duty free status, under all tariffs, of natural and synthetic manganese dioxides be maintained until such time as ruled made in Canada.
2. The present tariff item be retained as follows:

	<u>B.P.</u>	<u>M.F.N.</u>	<u>Gen.</u>
Manganese dioxide	0	0	0
until such time as ruled 'made in Canada'."	(1)		

The company spokesman did not indicate the rates which should apply when the product was made in Canada. However, in other submissions by the company, rates of 15 p.c., B.P. and 20 p.c., M.F.N., were proposed for products made in Canada.

The Burgess Battery Company of Niagara Falls, Ontario, recommended free entry as follows:

<u>"Brussels</u> <u>Heading</u>	<u>Material</u>	<u>Present</u> <u>Tariff</u> <u>Item</u>	<u>Present</u> <u>Rates</u>		
			<u>BP</u>	<u>MFN</u>	<u>GEN</u>
26.01	Natural manganese dioxide	335	0	0	0
28.22	Synthetic manganese dioxide	335	0	0	0"(2)

The Mallory Battery Company of Canada Limited, Toronto, Ontario, supported the Union Carbide proposals.(3)

Ray-O-Vac (Canada) Limited, Winnipeg, Manitoba, also supported Union Carbide and requested that the rates under item 335 remain free.(4)

Ferro Enamels (Canada) Limited, Oakville, Ontario also proposed free entry under item 335 until the product is ruled to be made in Canada.(5)

(1) Transcript, Vol. 16, p. 2345-6

(2) Same, Vol. 16, p. 2350

(3) Same, Vol. 16, p. 2351

(4) Same, Vol. 16, p. 2352

(5) Same, Vol. 16, p. 2354

The Canadian Pharmaceutical Manufacturers Association expressed an interest in manganese dioxide as a product of minor economic importance to its members. The Association recommended rates of Free, B.P. and 15 p.c., M.F.N., for chemicals used in the manufacture of pharmaceuticals, while they are not made in Canada, unless otherwise provided for.⁽¹⁾

The Consolidated Mining and Smelting Company of Canada Limited listed both the natural and synthetic products as being used by the company in its metallurgical and chemical operations. The company urged that there be no increase in rates for chemicals used by Canadian manufacturers.⁽²⁾

The Canadian Federation of Agriculture listed manganese dioxide as a constituent of fertilizers and recommended that such materials be entered free of duty under all Tariffs, when for use in agriculture.⁽³⁾

The Industry Committee proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N. for manganese dioxide, when ruled to be made in Canada. Although a reference was made to this by the spokesman for Union Carbide, this proposal was not supported directly by any of the companies who made representations to the Board. The Industry Committee did not indicate why such rates might be specifically suitable when the product was made in Canada.

The proposals submitted to the Board would leave the existing rates unchanged either by retaining the present tariff items or by creating two new items worded like the appropriate headings of the B.T.N., for example, as recommended by Burgess Battery Company.

Considerable discussion occurred regarding the classification of the products for Customs purposes. Existing tariff item 335 provides for both the ore concentrate and the synthetic forms. If an item worded like heading 28.22 of the B.T.N. were used to replace item 335, its scope would have to be broadened from that provided under the B.T.N. in order to have the same scope as item 335. Alternatively, a second item would have to be provided for the natural forms of manganese dioxide. It should be noted that manganese ore which was treated by usual mineralogical processes is classified in heading 26.01 of the B.T.N.; manganese ore (pyrolusite) which is subjected to processes not normal to the metallurgical industry, for example, for use in dry batteries, is classified in heading 25.32 of the B.T.N.⁽⁴⁾

In support of their rate proposals, the companies referred to manganese dioxide as an essential raw material whose cost was a considerable proportion of the total cost of the raw materials used in the manufacture of dry batteries. Union Carbide reported that synthetic manganese dioxide could constitute as much as one third of this cost.⁽⁵⁾

(1) Transcript, Vol. 87, p. 13321

(2) Same, Vol. 5, p. 715, 722

(3) Same, Vol. 83, p. 12813

(4) Explanatory Notes to the Brussels Nomenclature 1955, Vol. 1, p. 122

(5) Transcript, Vol. 16, p. 2345

Reference was made to the sharp increase of imports of dry batteries into Canada and it was said that "any tariff increase applicable to manganese dioxide would further aggravate this already serious competitive problem."⁽¹⁾ The Board's attention was also drawn to the use of dry batteries for power supplies, in times of emergency. Other companies supported the position of Union Carbide that:

"To impose a tariff on manganese dioxide would only make it more difficult for the Canadian producers to compete because of the resulting increase in dry battery costs.

"For these reasons it would not serve the best interest of the Canadian economy to change the duty-free status of natural and synthetic manganese dioxides."⁽²⁾

Ferro Enamels uses manganese dioxide in the manufacture of porcelain enamel frits, "as an adherence prompting agent (in conjunction with cobalt oxide) and also as a colouring agent in blue and black enamels."⁽³⁾ The company reported that it used pyrolusite, a natural mineral form, and the company supported free entry for pyrolusite on the grounds that the material was not available in any form from Canadian sources.

Although several companies appeared at the hearing to make representations regarding manganese dioxide, the chemical and the ore concentrate, no representations were submitted by the steel industry which accounts for about 98 per cent of the total consumption. As noted earlier, in 1962 consumption of battery grade ore was less than 2,000 tons, whereas consumption of metallurgical grade ore was 83,490 tons.

OTHER MANGANESE OXIDES

At the hearing on November 24, 1960, the spokesman for the Industry Committee said:

"When interpreted in accordance with these rules [of the B.T.N.] heading No. 28.22 would not apply to naturally occurring oxides of manganese which are classified as manganese ores of B.T.N. heading No. 26.01. Examples of such ores are braunite, hausmannite, psilomelane and pyrolusite. As far as the Committee has been able to determine, manganese dioxide is the only commercially significant product of this heading.

"It therefore suggests that other products are not sufficiently important to warrant classification or duty treatment different from those provided for heading No. 28.22 [15 p.c., B.P. and 20 p.c., M.F.N.]"⁽⁴⁾

(1) Transcript, Vol. 16, p. 2340

(2) Same, Vol. 16, p. 2341

(3) Same, Vol. 16, p. 2353

(4) Same, Vol. 16, p. 2365-6

Heading 28.22 also relates to manganese oxide, manganese (III) oxide, manganomanganic oxide and permanganic anhydride.

At later hearings, on end-use items, the Canadian Federation of Agriculture requested free entry under all Tariffs for materials used in the manufacture of fertilizers and animal feeds. The Federation listed manganese oxide as a component of both fertilizers and feeds.⁽¹⁾

No representations were made to the Board regarding other chemicals of heading 28.22.

No statistics are available regarding the other chemicals which would be classified in heading 28.22, and they would appear to be of minor or negligible economic significance. They are not known to be made in Canada and, apart from end-use items, would be entered under tariff item 335, free of duty under all Tariffs. Although the Industry Committee's proposal would involve a substantial increase in rates, from free entry to 15 p.c., B.P. and 20 p.c., M.F.N., it did not indicate why its proposed rates were appropriate specifically for the products to which they were intended to apply.

IRON OXIDES AND HYDROXIDES; EARTH COLOURS CONTAINING SEVENTY PER CENT OR MORE BY WEIGHT OF COMBINED IRON EVALUATED AS Fe_2O_3 - B.T.N. 28.23

Iron oxides and hydroxides form a group of products used essentially as pigments. They include both naturally-occurring types and chemically produced products. The more important of the artificially prepared forms include ferric oxide, usually red but sometimes violet, yellowish or black; ferrous hydroxide, a white solid which turns into ferric hydroxide in the presence of oxygen; and ferric hydroxide, a rust coloured, reddish brown or violet-glinting product.⁽²⁾

The naturally-occurring forms are frequently mixtures and usually contain impurities which, however, do not prevent their use as pigments. For example, hematite may be used for reds and magnetite for blacks. Mixtures of either the artificial or natural forms may be used to obtain other colours.

The Condensed Chemical Dictionary, in a long list, includes the following synonyms for ferric oxide -- iron oxide red, purple oxide, jeweler's rouge, English red, Persian red, caput mortuum, Italian red, Spanish oxide and Pompey red. The Dictionary adds,

"Some of these synonyms apply to relatively impure materials used as pigments; some apply to naturally occurring hematite (q.v.) of various degrees of purity, and before or after purification, heating or other treatment; others refer to synthetic materials prepared by various special methods. In most cases the terms are used loosely..."⁽³⁾

⁽¹⁾ Transcript, Vol. 83, p. 12813

⁽²⁾ Explanatory Notes to the Brussels Nomenclature, 1955, Vol. 1, p. 166-7

⁽³⁾ The Condensed Chemical Dictionary, 1956, p. 478

The above suggests the large variety of products which may be covered by the general designation "iron oxides and hydroxides." Some ochres, umbers and siennas, raw or burnt, are also included. Each of the latter designations may also be used loosely as in the case of ferric oxide, and each covers a variety of products.

Synthetic iron oxides have been produced in Canada since 1929 by only one company, the Northern Pigment Company Limited at Etobicoke, Ontario. The company spokesman said:

"Modest progress was made up to the time of World War II at which time heavy demands for the oxides developed for camouflage paints and protective coatings for war materiel ... plant facilities have since been increased considerably to permit the economical production of the product in quantity."(1)

Natural oxides are known to have been produced at Red Mill, Quebec since 1885. They have also been produced by Ferroxx Iron Limited at Prescott, Ontario since 1964 from ore mined at Gagnon, Quebec.

The Northern Pigment Company produces yellow, red and brown pigments in "almost fifty grades and shades." Its spokesman said:

"The important raw materials are, scrap iron, sulphuric acid and calcium hydroxide. Plant facilities required are principally a number of large wooden stave tanks, drying and calcining facilities, numerous compressors to supply compressed air, boilers for large quantities of steam, grinding mills and packing equipment."(2)

At the hearing in October 1962, the company spokesman said that efficient output had been achieved through technical improvements and large scale production. The company uses a process, which it has patented, to remove waste calcium sulphate. The efficiencies which have been achieved permit Northern Pigments to sell at \$30 to \$40 a ton below published prices in the U.S.A.

The company estimated the Canadian market at about 8,000 to 10,000 tons of iron oxides annually, of both natural and synthetic types. Imports were estimated at 2,500 to 3,000 tons per year of which only about 1,000 tons or approximately ten per cent of Canadian use was said to be directly competitive with Canadian material.(3) The remaining imports were of colours or qualities of product not available from Canadian production. The company exported 1,000 to 1,400 tons annually, about 40 per cent of its output, largely to the U.S.A.(4)

The principal use of iron oxides is in pigments for paints, concrete, rubber, flooring and roofing granules. A growing and important use is in the manufacture of ferrite cores for electronic equipment. The only consumption data available indicate a relatively stable use by the paint and varnish industry of about 1,750 to 1,950

(1) Transcript, Vol. 16, p. 2356

(2) Same, Vol. 16, p. 2357

(3) Same, Vol. 98, p. 14791

(4) Same, Vol. 98, p. 14785

tons annually, valued at about \$450,000. This would be 20 to 25 per cent of the total use of synthetic and natural oxides, as estimated by Northern Pigments.

The spokesman for Northern Pigments said the annual imports of 2,500 to 3,000 tons included some oxides not produced by his company. In 1960, the only year for which published statistics are available, imports were 2,300 tons valued at \$341,000. About 90 per cent were from the U.S.A. and six per cent were from Western Germany. Small amounts were also imported from the U.K. and other countries. Imports by Northern Pigments, for resale, were said to be about 15 to 25 per cent of all imports.⁽¹⁾

Exports of iron oxides (natural and synthetic) are substantial, amounting in value to \$474,000 in 1964. About 80 per cent of exports are to the U.S.A. Exports of synthetic types by Northern Pigments would be more than half the total.⁽²⁾

Exports of Iron Oxides, Natural or Synthetic,
Selected Years, 1954-64

	<u>U.S.A.</u>	<u>U.K.</u>	<u>Other</u>	<u>Total</u>	
	-	tons -		tons	\$'000
1954	2,741	3	367	3,111	422
1957	3,208	-	232	3,440	397
1960	1,740	21	762	2,523	405
1961	1,751	10	447	2,208	376
1962	1,442	23	400	1,865	366
1963	1,813	86	320	2,219	432
1964	2,163	61	184	2,408	474

Source: D.B.S., Trade of Canada, Exports, s.c. 40240

In the U.S.A., iron oxides are sold f.o.b. plant in a number of colours and grades at prices which vary from 2.3 cents a pound for the natural Peruvian type to 15.75 cents a pound for pure iron oxide brown. In November 1960, Northern Pigments said that Canadian prices were less than those in the U.S.A. At that time the Canadian prices for red and yellow oxide were said to be \$250 and \$215 a ton, respectively; the comparable prices in the U.S.A. were \$290 for the red and \$245 for the yellow oxide. European prices (German and U.K.) were given as much lower (\$160 for red and \$150 for yellow), but the discussion indicated that the products were not comparable. In October 1962, two years later, the company's submission indicated that prices had not changed.

(1) Transcript, Vol. 98, p. 14791

(2) Same, Vol. 98, p. 14785

Tariff Considerations

Iron oxides and hydroxides are entered under the items tabulated below.

<u>Item</u>	<u>Short Description</u>	<u>Rates of Duty</u>	
		<u>B.P.</u>	<u>M.F.N.</u>
245	Ochres, ochrey earths, siennas and umbers	5 p.c.	12½ p.c.
246	Oxides and Colours, dry, n.o.p.	12½ p.c.	17½ p.c.
246d	Colours or pigments for use in the manufacture of roofing granules	Free	Free
246f	Iron oxide for use in the manufacture of magnetic recording tape	Free	Free
208t	(Iron hydroxides) chemicals, n.o.p., of a kind not made in Canada	Free	15 p.c.

At the public hearings in November 1960 and October 1962, Northern Pigments Company Limited proposed that a classification like the Brussels Tariff Nomenclature be adopted and that B.T.N. headings 25.09 and 28.23 replace items 245 and 246. The company also recommended the deletion of end-use item 246d. Tariff item 246f was not in the Customs Tariff at that time. The company suggested a change in the Explanatory Notes to the Brussels Nomenclature respecting heading 25.09, which was intended to make heading 25.09 correspond to item 245; the existing rates for item 245 were recommended for heading 25.09 in its revised form. The rates suggested for heading 28.23 were those which apply to item 246.⁽¹⁾ The Company's production would be classified under heading 28.23.

The B.T.N. classifies iron oxides according to their content of combined iron evaluated in terms of ferric oxide (Fe_2O_3). Heading 28.23 specifies a content of 70 per cent or more, by weight, and heading 25.09 pertains to oxides which contain less than 70 per cent. On the other hand, the differentiation between items 245 and 246 is based on the product's content of claylike material insoluble in hydrochloric acid, and does not depend directly on the product's content of iron oxide. For inclusion under item 245 the content of claylike material must be not less than 10 per cent by weight and for item 246 the content must be 10 per cent or less. Thus, under existing practice, there is no direct correspondence between the B.T.N. headings and the relevant items of the Canadian Customs Tariff.

Moreover items 245 and 246 include products whose pigmentary properties may be derived from chemicals other than iron oxides. B.T.N. heading 28.23 relates only to iron oxides and hydroxides.

Although a large part of the entries under items 245 and 246 might be classified by headings 25.09 and 28.23 of the B.T.N., the submissions in 1962 indicated that headings 32.05, 32.06 and 32.07, which refer to pigments, would also be involved. The discussions made it clear that the scope of items 245 and 246 went beyond headings

(1) Transcript, Vol. 16, p. 2360-62; Vol. 98, p. 14779-81

25.09 and 28.23. A more detailed discussion of headings 32.05, 32.06 and 32.07 is given in the section of the report dealing with pigments.

Thus, insofar as heading 25.09 corresponds with item 245, and heading 28.23 with item 246, the proposal of Northern Pigments would leave the existing rates unchanged. However, the proposed deletion of item 246d would eliminate the existing free entry for use in the manufacture of roofing granules and make imports, which are now entered under it, subject to rates of 5 p.c., B.P. and $12\frac{1}{2}$ p.c., M.F.N., if the product contained less than 70 per cent of combined iron, and to rates of $12\frac{1}{2}$ p.c., B.P. and $17\frac{1}{2}$ p.c., M.F.N., if it contained 70 per cent or more of contained oxide.

The submission of Northern Pigments was the only one presented at the hearing in November 1960. However, other companies and trade associations made their views on iron oxides known, particularly at the hearing on paints and pigments, in October 1962, at which Northern Pigments reiterated its proposals.

Minnesota Minerals Limited, a manufacturer of roofing granules in Canada, strongly opposed deletion of end-use item 246d.⁽¹⁾

Consolidated Mining and Smelting Company of Canada Limited was opposed to any increase in rates or any modification of end-use items which might result in an increase in rates. The company informed the Board of its interest in iron oxides, both as a producer of iron calcine (70 per cent ferric oxide) and as a consumer of an iron oxide known as Danish catalyst.⁽²⁾

The Canadian Paint Varnish and Lacquer Association, whose members use iron oxides, did not oppose the rate proposals of Northern Pigment. In its main submission the Association generally did not oppose rates proposed by Canadian producers for products used by its members, and requested rates of 10 p.c., B.P. and 20 p.c., M.F.N., for the products of the paint industry.⁽³⁾

One company and two trade associations expressed their interest in iron oxides and requested either the maintenance or creation of end-use items for the chemicals which they used.

Polymer Corporation Limited indicated its interest in an iron oxide catalyst which might be classified under heading 28.23 of the B.T.N. Polymer requested continuation of end-use item 851 with free entry under all Tariffs, for materials used in the production of synthetic rubber.⁽⁴⁾

The Canadian Federation of Agriculture listed ferric oxide as a chemical used in the manufacture of fertilizers and recommended that the existing duty-free provisions of tariff item 663b be continued for articles which enter into the manufacture of fertilizers.⁽⁵⁾

(1) Transcript, Vol. 98, p. 14873

(2) Same, Vol. 5, p. 715

(3) Same, Vol. 91, p. 13745

(4) Same, Vol. 89, p. 13587

(5) Same, Vol. 83, p. 12813-4

The Canadian Pharmaceutical Manufacturers Association listed ferric oxide as a chemical of minor economic importance used by its members and requested that chemicals used in the manufacture of pharmaceuticals, when not made in Canada, should be entered Free, B.P. and at 15 p.c., M.F.N., unless otherwise provided for. When the chemicals are made in Canada, the rates proposed were 15 p.c., B.P. and 20 p.c., M.F.N.(1) The Association did not specify whether the product to which they referred was made in Canada.

Except that the elimination of item 246d would increase the rates for iron oxides entered under this item, Northern Pigments indicated that it did not intend its proposals to result in any increase in rates. In fact, the company was opposed to an increase because such an act might result in retaliatory increases by the U.S.A., an important market for its products.(2)

The proposal of the pharmaceutical manufacturers would result in an increase in the B.P. and M.F.N. rates under both items 245 and 246. However, it would be in the interests of its members if lower rates prevailed, and the Association qualified its proposal with the words "unless otherwise provided for" when the product was not made in Canada.

The other proposals would continue the existing rates.

In support of the existing rates of duty for products classified by items 245 and 246, the spokesman for Northern Pigments stated:

"There are two factors that influence our recommendation that the present rates of duty be maintained and these are as follows:

"(a) While the U.S. prices are higher than those at which the company offers similar grade, we consider that the differential developed by the tariff on U.S. imports is necessary to induce Canadian paint companies of U.S. origin that have been working to U.S. formulas developed in their parent plants, to change these formulas, ... to accommodate the Canadian product.

"(b) Production in Germany and U.K. of similar material is offered at prices lower than this company can reasonably match without the present tariff protection."(3)

As noted above, in October 1962, Northern Pigments was selling oxides in Canada well below the comparable price in the U.S.A. For example, the Canadian price of red oxide was 25 per cent less than the comparable price in the U.S.A. and the price of yellow oxide was 23 per cent less than in the U.S.A. (all prices expressed in terms of Canadian funds). Although prices of the European oxides were said to be much lower than those for the Canadian material, at the time of the hearing imports were relatively small, at least partly, apparently because grades were not comparable.

(1) Transcript, Vol. 87, p. 13321

(2) Same, Vol. 16, p. 2359-60

(3) Same, Vol. 16, p. 2358-9

The company representative also said that he would not like to see any change in the tariff structure "which might open the door to the renegotiation of the iron oxide item to the disadvantage of our considerable exports to the United States." (1) Imports entering the U.S.A. are dutiable at 10 p.c.

At the hearing in 1962, the spokesman said that of the estimated annual imports of about 3,000 tons, only 1,000 tons would be competitive with Canadian production. These imports would be 10 to 15 per cent of estimated Canadian consumption. The evidence indicated that it would be difficult to judge what part of the 1,000 tons was truly competitive. For example, Minnesota Minerals said it sold its roofing granules to manufacturers of finished roofing materials and that the demand for the granules reflected changing consumer tastes and fashions in colours, over which neither Minnesota Minerals nor the manufacturers had control. The company spokesman said that only 16 per cent of his company's imports were competitive with products made by Northern Pigments; the remaining 84 per cent were of colours and types not available in Canada. The discussion indicated that, generally, Canadian consumers of pigments purchased the domestic product and that most imports were of colours or shades not available in Canada.

The price and quality of Northern Pigments' products permitted the company to export about 40 per cent of its output, largely to the U.S.A., but also to European countries including the U.K. and West Germany. When questioned about the similarity of the Canadian red oxide which was being sold at \$250 a ton and the German product which was said to be priced at \$160 a ton, the following exchange occurred:

"Q.: ... when I compare the German price with your price, I wonder why these unsuspecting Americans disperse /disburse/ such large funds to acquire the same product.

"A.: Well I suppose it is a matter of the quality, to some extent.

"Q.: You think that there is a difference in the actual product itself,...

"A.: Yes, there is some difference involved. As a matter of fact, we have shipped to Germany, because a particular quality is required for a particular end-use, in spite of the fact that our laid-down price over there would be considerably higher than their local price." (2)

Northern Pigments' support for elimination of end-use item 246d was based on the argument that the manufacturer of roofing granules imported materials which were available domestically. However, the spokesman for Minnesota Minerals, the only manufacturer of roofing granules said:

(1) Transcript, Vol. 16, p. 2360

(2) Same, Vol. 98, p. 14786

"I would like to submit ... that adoption of the recommendation with respect to 246d will do Northern Pigments no good and in fact harm their ... present customers, which are ourselves, and in turn transmit this to manufacturers of roofing material. I think it has already been discussed ... that most of the iron oxide ... that are imported for this end-use, are of a type that you Northern Pigments do not make; and I would like to confirm this fact. We have evaluated and approved the red and yellow oxides for use in the manufacture of roofing granules. The question of suitability comes up with respect to the use of brown oxide ... Adoption of your recommendation on an all inclusive basis would mean that we would be subject to duty on an item that we have to import anyway, because your production is not suitable for this particular colour. ... I suggest this recommendation would have the net effect of doing your company no good and would in fact harm our company." (1)

Minnesota Minerals informed the Board that granules for use in the manufacture of roofing or siding are imported under item 309a, free of duty under both the B.P. and M.F.N. Tariffs. (Roofing granules for other purposes are dutiable at 15 p.c., B.P. and 15 p.c., M.F.N., under an extract of Tariff Item 711.) Its spokesman told the Board:

"In spite of our success with Canadian made pigments there will always be a few pigments, which, for reasons of quality, or lack of a Canadian manufacturer, we shall continue to import. Because pigments constitute an important element of our manufacturing cost, we urge the continuation of item 246(d)." (2)

COBALT OXIDES AND HYDROXIDES - B.T.N. 28,24

COBALT OXIDE

There are three common forms of cobalt oxide: cobaltous oxide, CoO , (also known as grey oxide and cobalt monoxide) containing 78.65 per cent cobalt; cobaltic oxide, Co_2O_3 , (also known as cobalt black and cobalt III oxide) containing 71.06 per cent cobalt; cobalt saline oxide, Co_3O_4 , (also known as cobalto-cobaltic oxide, tricobalt tetroxide and cobaltosic oxide) containing 73.43 per cent cobalt. Only one form is produced in Canada, the cobaltic oxide, about 96 per cent pure and containing 70 to 71 per cent cobalt metal equivalent. It is produced by Cobalt Refinery Limited, at Cobalt, Ontario, as a by-product of silver-refining operations. The company began producing cobaltic oxide in 1962. Cobalt oxide had been produced from about 1918 to 1960 by Deloro Smelting and Refining Company Limited, at Deloro, Ontario.

(1) Transcript, Vol. 98, p. 14802-3

(2) Same, Vol. 98, p. 14873

The spokesman for Cobalt Refinery Limited estimated the Canadian market for cobaltic oxide in 1962 at about 75,000 pounds per year. The Canadian Minerals Yearbook reported that in 1963 Canada consumed about 88,000 pounds of cobalt oxide. At then current prices for the 70 to 71 per cent cobalt grade, this amount would have a value of about \$106,000.

The principal use of cobaltic oxide is in the manufacture of ground frits for the application of enamels. It is also a colourant in ceramics and coloured glass and is used to manufacture paint driers and cobalt salts. The commercial form of the grey (cobaltous) oxide, which contains about 75 to 76 per cent cobalt metal, is not now made in Canada. It is used mainly as a raw material for cobalt salts. Until 1960 it was produced by Deloro Smelting and Refining.

At the public hearing, in September 1962, the spokesman for Cobalt Refinery indicated that he did not consider imports to have had an important share of the Canadian market but that efforts were being made by producers in the U.K. to obtain a larger share. He informed the Board that the company had an assured market in the U.S.A. for all the cobaltic oxide which it could produce and that he expected about 50 per cent of the production to be exported.⁽¹⁾ He also said that the company expected to export only product that was in excess of Canadian demand. According to the Canadian Minerals Yearbook, Cobalt Refinery produced about 53,000 pounds of cobalt oxide in 1963, considerably less than the 88,000 pounds of all cobalt oxides used in that year.

Cobalt oxides were said to be produced principally in the province of Katanga of the Congo Republic, as a co-product of refining copper. The Katanga product is sold in world markets on a basis of delivered prices, duty paid, and Cobalt Refinery, and Deloro before it, would have to meet these prices in order to sell their product. The spokesman for Cobalt Refinery stated that in September, 1962, the price in the U.S.A. east of the Mississippi was \$U.S. 1.12 per pound and west of the Mississippi \$U.S. 1.15 a pound.⁽²⁾ These prices were also in effect in 1963. On sales to the United States in 1962, Cobalt Refinery absorbed the duty of four cents a pound and the freight of one and one-half cents. Thus, on sales in Canada the company received about five cents a pound more and for this reason preferred to sell all that it could in Canada before exporting to the U.S.A. This difference has probably diminished since the U.S.A. duty on imports of cobalt oxide was reduced to 2.7 cents a pound in 1962 and 1.5 cents a pound in 1963.

Tariff Considerations

Cobalt oxides are entered under item 208k, "Oxide of Cobalt", Free, B.P. and 10 p.c., M.F.N. Cobalt Refinery Limited initially proposed rates of 10 p.c., B.P. and 15 p.c., M.F.N. at the hearing of September 10, 1962. However, in a subsequent letter to the Board, the proposal was changed to 15 p.c., B.P. and 25 p.c., M.F.N.⁽³⁾

(1) Transcript, Vol. 85, p. 12990

(2) Same, Vol. 85, p. 12981

(3) Same, Vol. 85, p. 12962; Vol. 109, p. 16544

Ferro Enamels Canada Limited, a major consumer of cobalt oxide, proposed that the existing rates of Free, B.P. and 10 p.c., M.F.N. be continued until the product is considered made in Canada for tariff purposes. When it becomes ruled made in Canada, the company recommended rates of 15 p.c., B.P. and 20 p.c., M.F.N.⁽¹⁾ The company did not indicate why these rates would be appropriate.

Mallinckrodt Chemical Works Limited proposed free entry under both the B.P. and M.F.N. Tariffs until the product is made in Canada.⁽²⁾ The company was not represented at the hearing and its brief did not indicate what rates it would recommend for the product when ruled to be made in Canada.

In support of its recommendation for increased rates, Cobalt Refinery claimed that, unless it obtained higher returns from its by-products, its operations would be uneconomic. The company spokesman indicated that the returns on sales in Canada were higher than on sales in the U.S.A. and said that the increased duty would assist the company in retaining a large share of the more lucrative Canadian market.

Cobalt Refinery is engaged principally in refining silver concentrates. As indicated by its spokesman, the company would have no difficulty in selling its total output in the U.S.A. at a price of \$U.S. 1.12 per pound of contained cobalt, east of the Mississippi. As noted above, the return to the company on these sales was less than that on sales to the Canadian consumer, although the differential may have narrowed because of a reduction in the U.S. duty.

The spokesman said that the company did not intend to raise the price to Canadian consumers if it obtained additional protection. The duty would be used to gain a larger share of the Canadian market. However, under questioning he admitted that circumstances might arise to warrant an increase although this was not the intention at the time of the hearing.⁽³⁾ An increase in the Canadian rates of duty would permit the company to raise its prices on sales to Canadian consumers but would not affect its selling prices in the U.S.A.

At the public hearing, in February 1961, Mallinckrodt Chemical Works informed the Board that at that time it had been unsuccessful in its efforts to find an alternative source of supply for cobalt oxides previously obtained from Deloro Smelting.⁽⁴⁾

Although Mallinckrodt did not specify the form of cobalt oxide in which it was interested, the discussion at the hearing of September 10, 1962, indicated that at least part of the company's consumption was of the cobalt oxide, grey, or cobaltous oxide.⁽⁵⁾ Cobalt Refinery indicated that it produced only cobaltic oxide, (cobalt oxide black). The Mallinckrodt submission proposed free entry for cobalt oxides while not made in Canada. In support of this proposal, the company's brief stated that:

(1) Transcript, Vol. 17, p. 2382

(2) Same, Vol. 17, p. 2393

(3) Same, Vol. 85, p. 12995

(4) Same, Vol. 25, p. 3779, 3782

(5) Same, Vol. 85, p. 12997

"As we see it, the interests of no Canadian producer would be affected by duty free treatment. Canadian consumers such as ourselves would have access to more sources of raw material, and our supply of cobalt oxide would not encounter arbitrary impediments tending to increase costs."(1)

Although Cobalt Refinery expected to be able to supply total Canadian requirements of cobaltic oxide, this expectation has apparently not been realized. The company produced about 53,000 pounds of the oxide in 1963, 60 per cent of the reported consumption of all forms of cobalt oxide in that year. The difference would be made up by imports. Cobalt Refinery's ability to supply Canadian needs is governed by the quantity of silver ore which is sent to it to refine and the cobalt content of the ore. There is also the question of whether the form produced by Cobalt Refinery is suitable for all uses. The available evidence indicates considerable uncertainty that the company can, in fact, supply the Canadian demand for cobaltic oxide, the only form which it produces; the company does not produce either cobalt saline oxide (the grey form) or cobaltous oxide (the other black form).

If, as requested by the company, Canadian rates of duty were increased from the existing Free, B.P. and 10 p.c., M.F.N. to 15 p.c., B.P. and 25 p.c., M.F.N., the company would be in a position to establish a substantially larger differential between prices to domestic consumers and prices to consumers in the U.S.A. According to the company, in 1962 returns from sales in Canada were about five cents a pound higher than those from sales in the U.S.A. At that time imports from the U.K., by far the major external supplier, were free of duty.

Tariff item 208k is worded "Oxide of Cobalt" and therefore includes the three oxides which, by the Brussels Tariff Nomenclature, would be classified as chemicals under heading 28.24 and those classified in the B.T.N. as minerals of heading 26.03. The spokesman for the Industry Committee suggested that if the wording of item 208k were changed to "oxides of cobalt, not chemical" the item would cover those oxides of cobalt of B.T.N. heading 26.03. He said there would be no difficulty in administering such an item because of wide differences in purity and form between the chemicals of an item like B.T.N. heading 28.24 and the minerals then classified under the re-worded item 208k.

COBALT HYDROXIDE

Cobalt hydroxide is a red, powder-like compound of cobalt. Its main use is in the paint industry in the manufacture of paint driers which are added to prepared paints. Cobalt driers may be produced by several processes, utilizing a variety of cobalt-bearing materials. Commercially, the most important of these are cobalt metal, cobalt sulphate and cobalt hydroxide. Cobalt metal and cobalt sulphate are made in Canada; cobalt hydroxide is not.

At the time of the public hearing, in January 1961, there were two merchant-producers of paint driers in Canada, Dussek Brothers Canada Limited and Nuodex Products of Canada Limited. Mention was made

(1) Transcript, Vol. 17, p. 2393

of another manufacturer who produced paint driers for captive use.⁽¹⁾ Dussek Brothers used cobalt hydroxide in its process; Nuodex used cobalt metal or cobalt sulphate. The discussion, at the hearing, suggested that in general, driers of equal quality could be produced by using either the cobalt hydroxide or the cobalt metal.⁽²⁾ However, Dussek Brothers' spokesman pointed out that the cobalt metal process was patented by Nuodex and that this precluded his company from using it. Moreover, there was some disagreement between the spokesmen for Dussek Brothers and Nuodex whether all three of the principal materials (cobalt metal, cobalt hydroxide and cobalt sulphate) were substitutable for each other in all types of driers.

Dussek Brothers' representative stated that his company imported its supplies of cobalt hydroxide from the U.K. He estimated that the hydroxide constituted more than 50 per cent of the cost of raw materials in the driers. Nuodex, which used either the metal or the sulphate, indicated that it purchased these materials from Canadian producers.

Tariff Considerations

Cobalt hydroxide is entered under tariff item 208t at rates of Free, B.P. and 15 p.c., M.F.N.

At the public hearing, in January 1961, Dussek Brothers (Canada) Limited requested free entry for the product until it is made in Canada and 15 p.c., B.P. and 20 p.c., M.F.N. when it is ruled to be made in Canada.⁽³⁾

Nuodex Products Canada Limited did not propose rates specifically for cobalt hydroxide. The spokesman said that his company's interest was in having uniform rates for all cobalt-bearing materials when used in the production of paint driers.⁽⁴⁾

In support of its proposal, Dussek Brothers' spokesman said that since no Canadian-made or other substitute is available for cobalt hydroxide in making certain types of paint driers, and since cobalt hydroxide is not made in Canada, duty on the product would serve only to raise costs to Canadian manufacturers. Nuodex pointed out that the two principal competitive raw materials, cobalt metal and cobalt sulphate are used by his company. He said:

"both of these cobalt materials are made in Canada and protected by appropriate tariffs. Cobalt sulphate by item 711 is 15 per cent B.P. and 20 per cent M.F.N., and cobalt metal by item 208t is 10 per cent M.F.N. ...

"This company recommends that all cobalt-bearing materials for the production of cobalt driers be classified similarly as to tariff. Thus, no drier manufacturer would be penalized as a result of the specific process and cobalt raw material he utilizes to produce cobalt driers."⁽⁵⁾

(1) Transcript, Vol. 18, p. 2575

(2) Same, Vol. 18, p. 2578

(3) Same, Vol. 18, p. 2567, 2572

(4) Same, Vol. 18, p. 2578-9

(5) Same, Vol. 18, p. 2578

The company's submission suggested that Canadian manufacturers of the metal and the sulphate were taking advantage of the existing tariffs and that free entry for the hydroxide would give Dussek Brothers an advantage in the purchase of its principal raw material.

TITANIUM OXIDES - B.T.N. 28.25

TITANIUM DIOXIDE

The Product and the Industry

Titanium dioxide, also known as titanium oxide, titanic oxide, titanium white and titania, is the only oxide of titanium of commercial importance. It is a very finely divided white powder and has the greatest opacifying power of all of the white pigments. The opacifying power of titanium dioxide is ten to twelve times that of white lead, six times that of zinc oxide or antimony oxide, and four times that of lithopone.

In commerce, the terms "titanium oxide" and "titanium dioxide" are frequently used interchangeably and are normally used to refer to the so-called "pure titanium dioxide pigments." These "pure" pigments are usually 94 to 99 per cent of titanium dioxide, the remainder consisting of special additives. There are two general types of pure pigment, anatase and rutile. The rutile is by far the more important form commercially because of its superior hiding power. It is priced higher than the anatase.

Titanium dioxide is also available as an "extended pigment" which contains varying percentages of titanium dioxide and fairly large amounts of extenders such as barium sulphate or calcium sulphate. The extended pigment may be a physical mixture or it may be chemically prepared by co-precipitation. In Canada the only extended titanium pigments that are known to be sold are the "C" or calcium sulphate types. The two grades that are available contain either 30 per cent or 50 per cent titanium dioxide and are prepared by co-precipitation of the titanium dioxide and calcium sulphate. Extended pigments are used only in the manufacture of paints.

The pure pigments were first produced in Canada by Canadian Titanium Pigments Limited (C.T.P.) at Varennes, Quebec, in July of 1957. C.T.P. is a wholly owned subsidiary of the National Lead Company, of the U.S.A., the major supplier of the Canadian market previous to 1957. In 1962, the plant at Varennes was reported to have a capacity of 25,000 tons of titanium dioxide annually.

At the time of the public hearing, January 1961, a second plant was planned at Tracy, Quebec, by British Titan Products (B.T.P.). B.T.P. was at that time and prior to World War II also a major supplier of the Canadian market, importing its supplies from Britain. The B.T.P. plant came into operation in mid-1962, with an annual capacity of 22,000 tons of titanium dioxide. A report on these plants states that "each plant is capable of ready expansion to meet any unexpected

increase in domestic needs or export requirements."⁽¹⁾ In mid-1965 it was reported that B.T.P. was expanding its capacity by 30 per cent. The expansion was expected to be completed by the end of the year, and later in the year C.T.P. announced a planned expansion of 10,000 tons using the chlorine process of production.

According to the Oil, Paint and Drug Reporter there were eleven plants in the U.S.A. in 1964, eight of which were larger than the Canadian establishments. In 1962 there were also two British, two German, one French and one Japanese plant that were larger. However, the two Canadian plants each had a greater capacity than the 30 other plants in operation in 1962 throughout the non-communist world. Many of the plants in other countries had capacities considerably less than 10,000 tons annually. Some that were being planned at that time in the U.S.A. and other countries were either comparable in size or smaller than the Canadian plants.

The principal raw materials for the production of titanium dioxide are titanium slag and sulphuric acid. The slag is obtained, by Canadian producers of titanium dioxide, from Quebec Iron and Titanium Corporation (Q.I.T.), two-thirds owned by the Kennecott Copper Corporation and one-third owned by The New Jersey Zinc Company, two United States companies. C.T.P. produces its own sulphuric acid from sulphur recovered by Laurentide Chemicals and Sulphur Limited, Montreal, from oil refinery waste gases. Initially, B.T.P. will purchase sulphuric acid but ultimately the company intends to manufacture its own requirements.

The slag (ilmenite concentrate) which is produced at Sorel, Quebec, by Q.I.T. contains about 72 per cent titanium dioxide. Production of the slag began in 1950. In 1963 Canada produced almost 380,000 tons in spite of a strike which seriously affected production both in 1962 and 1963. In the free world, Canada is second only to the U.S.A. in production of ilmenite concentrates and accounts for about 20 per cent of the free world's output. Much of the slag is exported, mainly to the U.S.A., for use as a raw material in the manufacture of titanium dioxide pigments. Q.I.T. is reported to be able to treat more than one million tons of ore per year, the equivalent of around 385,000 tons of titanium dioxide. The combined capacity of C.T.P. and B.T.P. in 1964 would take less than 15 per cent of such an output.

The Market

Canada consumed about 39,000 tons of titanium dioxide in 1963.⁽²⁾ At \$25 a hundredweight this use would be valued at nearly \$20 million. About 3,200 tons was in the form of imported extended pigments. The use of extended pigments remained relatively stable between 4,800 and 5,400 tons annually (basis titanium dioxide content), during the five years, 1956 to 1960, but has been declining. In 1963 the use of extended pigments represented an estimated 3,196 tons of contained titanium dioxide. In 1964 estimated use on the same basis

(1) The Canadian Minerals Yearbook, 1961, p. 406

(2) Same, 1963

was about 3,600 tons. In contrast, the use of pure titanium dioxide pigments increased steadily during the period 1956 to 1963 and was 83 per cent more in 1963 than in 1956. The two principal suppliers of the market, Canadian Titanium Pigments and British Titan Products, estimated that in 1964 Canada would consume about 40,000 tons of titanium dioxide. The manufacturers were in agreement with others that the use of the product would continue to expand at a rapid rate. The expected rate of growth was given as seven per cent per year.⁽¹⁾ The reported expansion of plants in 1965 supports the accuracy of this forecast.

Extended titanium pigments are not manufactured in Canada and all imports are from the U.S.A. At the public hearing, in January 1961, the Canadian manufacturers said that only "C" type pigments were used in Canada, C.T.P. being the principal distributor.⁽²⁾ In terms of contained titanium dioxide, extended pigments in 1963 accounted for less than 10 per cent of the combined Canadian consumption of titanium dioxide and extended pigments; in 1958, five years previously, they had been 18 per cent of the estimated total use.

About two thirds of Canadian consumption of titanium dioxide (inclusive of the contained chemical in extended pigments) is in the manufacture of paints. The pulp and paper industry and the linoleum and tile industry together use between 11 and 14 per cent of the total. The remainder is for a number of other applications the most important of which are rubber products, ceramics, and polishes and dressings.

Consumption of Titanium Dioxide by Industry, 1962 and 1963

<u>Industry</u>	<u>1962</u>		<u>1963</u>		% of tonnage <u>1963</u>
	tons	\$'000	tons	\$'000	
Paints, Varnishes & Lacquers(b)	22,093	11,660	23,488	12,420	73.9
Pulp and Paper	3,268	1,550	3,645	1,590	11.5
Linoleum and Coated Fabrics	2,608	1,226 ^(a)	2,181	1,025 ^(a)	6.8
Rubber Products	951	474 ^(a)	972	484 ^(a)	3.0
Non-metallic Mineral Products	604	304	785	396 ^(a)	2.5
Misc. Chem. Industries	443	211	500	239 ^(a)	1.6
Other known use	<u>145</u>	<u>79</u>	<u>220</u>	<u>116</u>	<u>0.7</u>
Total Accounted For ^(c)	30,112	15,504	31,791	16,270	100.0

(a) Estimated

(b) Includes estimated titanium dioxide content of extended pigments

(c) Not all use is accounted for

Source: D.B.S., various publications; Canadian Minerals Yearbook

(1) Transcript, Vol. 17, p. 2464

(2) Same, Vol. 17, p. 2418, 2456

There was considerable discussion at the hearings regarding the use of extended pigments in paints. The titanium dioxide producers said that the pure pigment had already displaced much of the extended pigments and they anticipated further reductions in the use of the extended product.⁽¹⁾ The spokesman for the Canadian Paint Varnish and Lacquer Association claimed that, in some paint formulations, the use of "C" base extended pigment was essential. He pointed to the fact that, in the U.S.A. and Canada, consumption of extended pigments had fallen but in recent years had remained stable in spite of the growing use of pure pigments. He interpreted this to mean that for those applications in which the extended pigments were now being used, little additional substitution could be made.

The discussion indicated that an appropriate grade of the extender, precipitated calcium sulphate, was not available commercially. For this reason, some paint manufacturers would be forced to purchase the extended pigment in order to obtain the extender.

The major market area for titanium dioxide (including extended pigments) is in the provinces of Ontario and Quebec, and a large part of the sales are to consumers located near Montreal and Toronto. B.T.P. informed the Board that about 40 per cent of the company's sales were in the Montreal area. However, although there is a considerable concentration of sales in the two Central Provinces, consumers are located from coast to coast.

Foreign Trade

With production capacity in Canada well below market requirements until 1962, imports have been a very substantial part of Canadian supplies. Moreover, extended pigments are not produced in Canada and all requirements of them are imported from the U.S.A.

In 1956, the year before Canadian Titanium Pigments came into production, Canada imported an estimated 27,000 tons of titanium dioxide and extended pigments (basis titanium dioxide content). Of this amount 10,000 tons were from the U.K. and 17,000 tons from the U.S.A. In 1958, the first full year of C.T.P.'s operation, total imports were 15,000 tons, of which the U.K. supplied 11,000 tons and the U.S.A. about 4,000 tons. The available information indicates that most imports from the U.S.A. were in the form of extended pigments.

From 1958 until 1961 imports from the U.S.A. declined slowly from about 19,000 tons to 16,000 tons annually. It appears that in this period most imports from the U.S.A. were of the extended pigments and that C.T.P.'s production was supplying pure pigments previously imported by them from the U.S.A. Imports from the U.K. varied from around 10,000 to 12,000 tons annually; these imports would be of pure pigment only. In mid-1962, the Canadian plant of British Titan Products came into operation and imports from the U.K. declined from 12,000 tons in 1962 to less than 2,000 tons in 1963. Total imports declined further in 1964, to 1,839 tons of pure pigment and 10,400 tons of extended pigment. The imports of extended pigments probably represented about 3,600

(1) Transcript, Vol. 98, p. 14829

tons of titanium dioxide or about two thirds of all imports in terms of titanium dioxide. Imports of pure pigment were probably less than five per cent of Canadian use in 1964.

Imports of Titanium Dioxide and Extended Pigments, by
Principal Country of Origin, Selected Years, 1954-64

	<u>U.K.</u>		<u>U.S.A.</u>		<u>Total</u>	
	'000 tons	\$'000	'000 tons	\$'000	'000 tons	\$'000
1954	9.4	3,381	22.7	5,748	32	9,129
1956	9.7	3,884	28.0	8,638	38	12,598
1958	10.9	4,649	18.6	3,815	29	8,465
1960	9.7	4,053	16.7	3,386	27	7,648
1961	10.4	4,460	15.9	3,504	27	8,067
1962	11.8	5,263	13.1	2,819	25	8,090
1963	1.9	812	10.8	2,580	13	3,392
1964	1.1	471	11.1	2,361	12	2,843

Source: D.B.S., Trade of Canada, Imports, s.c. 8181 until 1962;
for 1962-64 total of s.c. 8178 and s.c. 8953

In 1962 the import data showed extended pigments separately for the first time. They indicated that imports from the U.S.A., in 1962 and 1963 were mainly of extended pigments, more than three quarters of which were entered in Quebec and Ontario. Imports of pure pigments in 1963 from the U.S.A. and the U.K. were only 1,473 and 1,895 tons, respectively, with 97 per cent of the total of 3,368 tons being into Ontario and Quebec.

Imports of Pure and Extended Pigments, by Region of Entry and
Principal Country of Origin, 1962 and 1963

	<u>Pure Pigment</u>				<u>Extended Pigment</u>	
	<u>U.S.A.</u>		<u>U.K.</u>		<u>U.S.A.</u>	
	<u>1962</u>	<u>1963</u>	<u>1962</u>	<u>1963</u>	<u>1962</u>	<u>1963</u>
	tons		tons		tons	
Atlantic Provs.	4	-	1,313	101	320	270
Que. and Ont.	815	1,465	9,682	1,789	9,463	7,174
Prairie Provs.	-	-	-	-	1,135	710
British Columbia	*	8	784	5	1,405	1,165
Canada	819	1,473	11,778	1,895	12,323	9,319

Source: D.B.S., s.c. 402-48 and s.c. 427-72

Until 1962, capacity in Canada was approximately half the market demand and, as noted, imports supplied the balance of Canadian requirements. In 1963 Canadian capacity was sufficiently large to supply the domestic market and even to provide for exports if the opportunity arose. Canadian export data are not available. However,

U.S. data indicate that in 1963 Canada exported 685 tons of titanium dioxide to that country and in 1964, 3,300 tons, valued at \$U.S. 1.3 million. Thus, in 1964 Canadian exports to the U.S.A. alone exceeded, both in quantity and value, imports of pure pigments from all countries.

Pricing Policy and Prices

In Canada, titanium dioxide is available commercially in 50 pound paper bags, as "technical" grade, as pure pigment either of the anatase or rutile types, and as an extended pigment with a content of either 30 per cent or 50 per cent of titanium dioxide. There are usually a number of types of product within each of these classes. The rutile type accounts for most sales of pure pigment and the 30 per cent "C" type extended pigment is by far the more popular of the extended pigments. The technical grade is mostly for use in welding rods and chemicals.

Titanium dioxide is sold in Canada on the basis of uniform delivered prices (for carload quantities) from Sault Ste. Marie, Ontario, eastward. Delivered prices to points west of Sault Ste. Marie are 50 to 55 cents per 100 pounds higher. Prices vary according to quantities purchased and most sales were said to be in carload lots; C.T.P. estimated that 75 per cent or more of the company's sales were in carload quantities. Sales of less than carload lots are f.o.b. the nearest warehousing point.

At the time of the hearing, early in 1961, B.T.P. prices were 90 cents per 100 pounds lower than C.T.P. prices, in the region east of Sault Ste. Marie and 85 cents less per 100 pounds on deliveries west of Sault Ste. Marie. When questioned about this the spokesman for C.T.P. said that his company had some difficulty selling under those circumstances.⁽¹⁾ The spokesman for B.T.P. later said that titanium dioxide had been in short supply in the U.K. for several years and that, at the time of the hearing, U.K. supplies were still not freely available.⁽²⁾ Presumably they were insufficient to supply the Canadian demand at the lower prices that were being quoted.

Prices of Titanium Dioxide, Pure Rutile Pigment, In Canada and the U.S.A., 1959-63

	Rutile, 50 lb. bags, carloads, Delivered East of Sault Ste. Marie ^(a)	Rutile, non-chalking, bags, carloads, Delivered East of Mississippi	
	\$Can. per cwt.	\$ U.S. per cwt.	\$ Can. per cwt.
1959	26.40	27.50	26.37
1960	26.40	27.50	26.67
1961	25.50	27.50	27.86
1962	25.50	27.50	29.39
1963	25.50	27.50	29.66
1964	25.50	27.50	29.66
1965	25.50	27.50	29.70

(a) Until 1963, prices are for Canadian-produced product sold by C.T.P.
Source: Canadian Chemical Processing and Oil, Paint and Drug Reporter

(1) Transcript, Vol. 17, p. 2485

(2) Same, Vol. 17, p. 2491

Prices in the U.S.A. increased during the early 1950's but have remained stable since 1957. Prices in Canada followed a similar pattern. At the hearing in 1961, the C.T.P. spokesman said that when his company began operations in Canada, the price of titanium dioxide was set at the price at which it had been sold in Canada up to that time (1957) by suppliers in the U.S.A., with allowance being made for the rate of exchange at that time.

The B.T.P. spokesman said that prices in the U.K. were substantially lower than in North America and that early in the post World War II period B.T.P. prices in Canada reflected this spread. He said that there had been a considerable closing of the spread.

Transportation

At \$25.50 a hundredweight or \$510 a ton, titanium dioxide is a relatively high-priced industrial chemical. Nevertheless, the cost of transportation to the more distant consuming points is an appreciable proportion of the cost. For example, in 1964, the freight rate, in carloads, to Winnipeg was about \$1.80 per 100 pounds, to Saskatoon about \$2.50, to Edmonton \$2.88, and to Vancouver \$2.33. In this western region the price of titanium dioxide, pure rutile pigment, in carload lots, was \$26 per 100 pounds. Because sales are on a delivered basis, the return to the seller, at plant, varied from \$23.12 to \$24.20 a hundredweight. Somewhat smaller but significant freight costs are also incurred on shipments to the Atlantic Provinces.

However, the great bulk of sales are in Ontario and Quebec and on these the Canadian producers typically absorb about 50 cents freight per hundredweight. The return at plant for the bulk of sales would therefore be about \$25 per 100 pounds compared with \$23 to \$24 for sales west of Sault Ste. Marie and about \$24 in the Atlantic Provinces.

Tariff Considerations

Titanium dioxide and titanium dioxide extended pigments are entered under existing tariff item 242 and may also be entered under end-use items 203d, 246b and 246d. By far the largest part of the imports are under item 242.

	<u>British Preferential Tariff</u>	<u>Most- Favoured- Nation Tariff</u>
<u>Item 242 (in part)</u>		
... titanium oxide ...; white pigments containing not less than 14 per cent by weight of titanium dioxide.....	Free	12½ p.c.
<u>Item 203d (in part)</u>		
Pigments, with or without dispersing agents, whether or not in aqueous dispersion ... all for use in the coating, colouring or printing of textiles.....	Free	Free

	<u>British Preferential Tariff</u>	<u>Most- Favoured- Nation Tariff</u>
<u>Item 246b (in part)</u>		
Stains and oxides ... for use exclusively as colouring constituents in the manu- facture of vitreous enamels and pottery glazes.....	Free	20 p.c.
<u>Item 246d</u>		
Colours or pigments for use in the manu- facture of roofing granules.....	Free	Free

In the Brussels Tariff Nomenclature, pure titanium dioxide is classified in heading 28.25, "Titanium Oxides"; when mixed with barium or calcium sulphate or other substances, it is classified as a pigment under heading 32.07. Tariff item 242 includes material that would be classified by both headings. Formal submissions on titanium dioxide were heard by the Board at the hearing in January 1961, and on titanium dioxide extended pigments, in October 1962. Inevitably, the discussions covered the pure and extended pigments of titanium dioxide at both hearings.

At the public hearing, in January 1961, Canadian Titanium Pigments Limited and British Titan Products (Canada) Limited jointly proposed "rates of duty of 15 per cent B.P. and 20 per cent M.F.N., on titanium dioxide as described by heading 28.25 of Brussels Nomenclature."⁽¹⁾ In October 1962, the two companies also proposed the same rates for the extended titanium pigments of heading 32.07.⁽²⁾

Laporte Chemicals Canada Limited appeared on behalf of Laporte Titanium Limited of the United Kingdom and took exception to the rates proposed. Its spokesman stated:

"Laporte Titanium Limited respectfully submit that British material should continue to be admitted duty free and that the present preferential margin be maintained on all grades of titanium oxide."⁽³⁾

In effect, he was proposing continuation of the existing rates under item 242. The company's interest was in sales of the imported product from the U.K.

The Canadian Pulp and Paper Association opposed any increase in rates in the following terms:

⁽¹⁾ Transcript, Vol. 17, p. 2437

⁽²⁾ Same, Vol. 98, p. 14805

⁽³⁾ Same, Vol. 17, p. 2512

"We are opposed ... to any change in the tariff such as that suggested for titanium dioxide, the effect of which can only be to increase the costs of production of those grades of paper and board in which the use of this chemical is essential."(1)

The Association's position on titanium dioxide either in the form of pure pigment (28.25) or extended pigment (32.07) was reiterated at the hearing on September 10, 1962.(2)

The Rubber Association of Canada also opposed any increase in rates for titanium dioxide. Its spokesman made the following statement at the hearing in January, 1961:

"the rubber industry is already subject to heavy and increasingly severe import competition to the point where it must oppose any measure that would tend to widen to its disadvantage the differentials between the costs of rubber manufacturing in Canada and costs elsewhere."(3)

Ferro Enamels Canada Limited gave qualified support to the proposals of the Canadian producers for rates of 15 p.c., B.P. and 20 p.c., M.F.N. However, the company proposed free entry under both the B.P. and M.F.N. Tariffs, for the enamel grade which is not produced in Canada and is used by Ferro Enamels in the manufacture of cover coat frits. When it is made in Canada, Ferro Enamels would not oppose rates of 15 p.c., B.P. and 20 p.c., M.F.N. Ferro Enamels' spokesman also stated,

"We suggest this item be designated under 'Heading 28.25 -- Titanium Oxides' and be worded as follows:

"Titanium dioxide, other than pigment grade, when imported exclusively for smelting into porcelain (vitreous) enamel frits, to apply till a product suitable for the purpose is ruled as made in Canada ... B.P. - 0; M.F.N. - 0."(4)

The spokesman for Courtaulds (Canada) Limited said that he did not oppose the request of the Canadian producers for "a reasonable degree of protection." He added:

"All we wish to do at this time ... is to note with the Board that we feel that you should examine carefully what is the realistic measure of protection which they require."(5)

Naugatuck Chemicals Division of Dominion Rubber Limited, at the hearing on September 15, 1960, informed the Board that it did not object to the rates proposed by others for chemicals used by the company. However, this was conditional on the Board also recommending

(1) Transcript, Vol. 17, p. 2498

(2) Same, Vol. 36, p. 5246; Vol. 85, p. 13011

(3) Same, Vol. 17, p. 2503

(4) Same, Vol. 18, p. 2545

(5) Same, Vol. 18, p. 2562

"those rates which will be proposed to you for the products which we manufacture."(1) Titanium dioxide was listed as a chemical which was used by the company.

At the hearing on October 19, 1962, the Canadian Paint Varnish and Lacquer Association recommended rates of $12\frac{1}{2}$ p.c., B.P. and $12\frac{1}{2}$ p.c., M.F.N., for titanium calcium extended pigments.(2)

The Canadian Pharmaceutical Manufacturers Association expressed an interest in titanium dioxide. The Association recommended rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for chemicals made in Canada and used in the manufacture of pharmaceutical products. When the product is ruled to be made in Canada, the Association supported rates of 15 p.c., B.P. and 20 p.c., M.F.N.(3) The Association did not indicate whether the grade of titanium dioxide which its members used was available from Canadian production.

The proposals of Canadian Titanium Pigments and British Titan Products would increase the existing B.P. Tariff, under item 242, from free entry to 15 p.c., and the M.F.N. Tariff from $12\frac{1}{2}$ p.c. to 20 p.c. The Pharmaceutical Manufacturers Association and Ferro Enamels supported these rates when the grades which they used were considered to be made in Canada. However, when the grades are not made in Canada, the former proposed free entry under the B.P. Tariff and a rate of 15 p.c., M.F.N., and the latter urged free entry under both the B.P. and M.F.N. Tariffs. Naugatuck Chemicals and Courtaulds did not oppose the rates proposed by the producers, but also did not offer specific support for them nor suggest any alternative rates. The support of Naugatuck was conditional on the Board's acceptance of proposals that would be made for the products of that company, and Courtaulds requested that the Board "examine carefully what is the realistic measure of protection which they require."(4)

Laporte Chemicals, the Pulp and Paper Association and the Rubber Association, in effect, were proposing maintenance of the existing rates under item 242.

The proposal of the Canadian Paint Varnish and Lacquer Association would increase the B.P. rate from Free to $12\frac{1}{2}$ p.c. for the calcium extended pigments, but would leave the M.F.N. rate unchanged. Since extended pigments are not available from British preferential countries, this proposal, too, was for maintenance of the existing rates under item 242.

Thus, three proposals were before the Board. One was for rates of 15 p.c., B.P. and 20 p.c., M.F.N.; one for maintenance of the existing rates of Free, B.P. and $12\frac{1}{2}$ p.c., M.F.N.; and one for free entry under the B.P. Tariff and either free entry or 15 p.c. under the M.F.N. Tariff, in suggested end-use items.

(1) Transcript, Vol. 6, p. 899

(2) Same, Vol. 98, p. 14762

(3) Same, Vol. 87, p. 13321

(4) Same, Vol. 18, p. 2562

Two major reasons were put forward by C.T.P. and B.T.P. in support of their proposed increase in rates. They said that they expected a severe world surplus to develop by 1963 with consequently increased competition, particularly from continental European countries. The second reason was that costs in Canada were higher than elsewhere and therefore that Canadian producers were at a cost disadvantage of 15 to 20 per cent.

The anticipation of a world surplus appears to have been unfounded up to late 1965. Although production capacity has been increased in several countries there appears to have been sufficient growth in demand to utilize the available titanium dioxide. The anticipation, in the absence of greater protection, of greatly increased imports from European producers has also not materialized. In 1964 imports of pure pigment into Canada continued to decline and consisted almost entirely of imports from the U.K. and the U.S.A. In the three years, 1962-64, imports other than from the U.S.A. and the U.K. averaged 16 tons annually, a negligible quantity relative to Canadian production or use. In 1963, the first full year in which B.T.P. was in production, imports of pure pigment declined sharply from about 13,000 tons to 3,367 tons, and in 1964 they decreased further to less than 2,000 tons. It is noteworthy that Canada exported about 700 tons of titanium dioxide to the U.S.A. in 1963. In 1964, Canadian exports of pure pigment to the U.S.A. were 3,300 tons, compared with imports of pure pigments, from all countries, of only 1,800 tons.

At the public hearing, in January 1961, the two Canadian producers were asked:

"If the advantages of production in other countries are so great as compared with Canada why would both the United States [sic] Lead Company and, more recently, B.T.P., decide to erect plants in Canada? This seems to be a puzzling factor."(1)

In reply the C.T.P. spokesman said:

"Our parent company was ... by far the major exporter from the U.S. ... to us, the major supplier in Canada. In view of the competition, which was described here, our parent company could see its market position being eroded, and to protect its market position, to gain whatever sales advantage there might be in marketing a home product made from home country minerals and so on, they decided it would be worth the risk involved to put capital in here and build a plant here rather than expanding the plant a similar amount in the United States.

"We, before building, had hoped that there might be something done along the line of protective tariff. We made certain approaches to the Canadian Government and we were told that nothing of the sort could be arranged or guaranteed. We decided to go ahead anyway ...

"Q.: And thus far I take it you have had no strong reasons for ...

"A.: Thus far we have not regretted having done it."(2)

(1) Transcript, Vol. 17, p. 2470-1

(2) Same, Vol. 17, p. 2471-2

The reply by the B.T.P. spokesman was in similar terms except that some emphasis was placed on the company's expectation that once production facilities were established in Canada, additional tariff protection would be forthcoming to protect "the benefits which will accrue to the economy as a whole from the maintenance of a sound indigenous titanium dioxide industry capable of supplying all domestic requirements." (1)

The spokesmen for both companies indicated that the capital invested in Canadian plants could have been invested elsewhere. C.T.P. mentioned the U.S.A. parent plant as an alternative and B.T.P. referred to the U.K. and other Commonwealth countries. C.T.P. decided to build a plant which required an initial investment of about \$15,000,000 in spite of the fact that the request for additional tariff protection had been rejected; five years later B.T.P. invested about \$18,000,000 in Canada's second plant. Moreover, although the tariffs remained the same, B.T.P. undertook an expansion of capacity of 30 per cent in 1965, only three years after its original plant came into operation and C.T.P. also has announced an expansion.

The claims of cost disadvantages of the order of 20 per cent are difficult to establish. The titanium slag which is used by both C.T.P. and B.T.P. is available nearby, and is exported in large quantities to producers in the U.K. and the U.S.A. for conversion into titanium dioxide. The spokesman for Laporte Titanium Limited noted that the Canadian plants "are substantial plants which should ... be capable of holding their own in world markets." He also pointed out that both had the "technical and financial backing of organizations with considerable knowledge and experience of the manufacture of titanium dioxide." (2) In this connection, it is interesting that Canadian prices have been about 14 per cent lower than published prices in the U.S.A. in the past three years.

Laporte Titanium informed the Board that not all grades of titanium dioxide were made in Canada and therefore that some of these, particularly the "technical grades" which are used for vitreous enamels would continue to be imported. The spokesman for the company claimed that the Canadian industry was adequately protected by transportation costs. He said that an increase in the B.P. rate from free entry to 15 p.c. would raise the cost of U.K. material to Canadian consumers sufficiently to affect the sales of Canadian finished products in Canada and in export markets.

The Rubber Association and the Pulp and Paper Association said that an increase in the rates of duty would increase the costs of their raw materials and therefore affect their position in already highly competitive markets.

Ferro Enamels corroborated the Laporte Titanium statement that the grades used for vitreous enamels were not being produced in Canada. Its spokesman indicated that titanium dioxide constituted about one-third of the raw material costs of the frits into whose manufacture it entered. He said:

(1) Transcript, Vol. 17, p. 2474-7

(2) Same, Vol. 17, p. 2513

"Till a suitable Canadian material is available, we are most anxious that we should not be penalized by higher tariffs on titania than the existing ones.

"We ... require to avoid any increase in raw material costs ... in order to avoid raising our enamel frit prices."(1)

The Paint and Varnish Association's position on extended titanium pigments was questioned at the hearing on October 19, 1962, because it appeared inconsistent with some other proposals of the Association. In reply the spokesman said:

"To some extent these things are always compromises ... Titanium producers appeared to be concerned with the possibility of competition from B.P. sources ...

"We are sympathetic to those concerned, although it is a rather academic point at the present time, as the pigments of this sort do not come in from B.P. sources.

"For this reason, we deviated from our policy, to recommend 12½% B.P., which goes in considerable measure towards the 15% rate being recommended ... by the Titanium producers."(2)

The discussion at the hearings indicated that only tariff item 242 was significant for imports of pure titanium dioxide pigments or extended pigments. It was said that items 203d and 246b were not being used and that very little was entered under item 246d.(3) Item 242 applies to both the pure pigments which are classified in the B.T.N. by heading 28.25 and the extended pigments under heading 32.07.

At the hearing on January 9, 1961, the spokesman for the Industry Committee said:

"The Committee is aware that variations may exist in the way in which heading No. 28.25 is interpreted by different countries subscribing to Brussels Nomenclature. In some cases the classification appears to be reserved for titanium dioxide alone whereas in others the heading may be applied to so-called 'pure' titanium dioxides which are known to contain small amounts of other substances which have been added to enhance the utility of the titanium dioxide for certain uses."(4)

The spokesman for British Titan Products referred to this problem as follows:

"in almost every country our market research people have found that it is almost impossible to get a true answer to what proportion of pure and extended pigments are entering the country; because the administration is not adequate to clarify the accuracy of the records ... I think that you probably do get

(1) Transcript, Vol. 18, p. 2543

(2) Same, Vol. 98, p. 14763-4

(3) Same, Vol. 17, p. 2441

(4) Same, Vol. 17, p. 2395

the extended pigments coming in under the pure classification and vice versa. But except for the U.K. and Germany the rates on pure pigment and extended pigments are the same, as far as I know, all over the world."(1)

Although other oxides of titanium are known to exist, the spokesman for the Industry Committee informed the Board that titanium dioxide was the only product of commercial importance in Canada under heading 28.25.(2)

TIN OXIDES (STANNOUS OXIDE AND STANNIC OXIDE) - B.T.N. 28.26

Stannous oxide occurs either as grey or black crystals, or as an olive-brown powder according to the process of preparation; it is used in organic synthesis as a reducing agent and catalyst. Stannic oxide is either a white powder (tin white) or a grey powder (tin ash); it is used mainly in the ceramic and glass industries as an opacifier.(3)

Neither product is known to be made in Canada and imported supplies are mostly from the U.K. Imports in 1963 of the two products combined were about 53,000 pounds valued at approximately \$67,000. In 1963, the average value of imports from the U.K. was \$1.16 a pound, from the U.S.A., \$1.70 a pound.

Imports of Oxide of Tin, by Country of Origin, Selected Years, 1953-63

	U.K.		U.S.A.		Total	
	'000 lb.	\$'000	'000 lb.	\$'000	'000 lb.	\$'000
1953	59.7	54.5	0.9	0.8	60.6	55.3
1956	63.4	62.0	0.8	0.8	64.2	62.8
1959	35.1	32.8	9.0	11.8	44.1	44.6
1960	32.6	30.6	6.8	9.6	39.4	40.3
1961	39.8	41.6	10.0	16.0	49.8	57.7
1962	44.8	53.7	9.1	15.8	53.9	69.4
1963	41.7	48.3	11.2	19.0	52.9	67.3

Source: D.B.S., Trade of Canada, Imports, s.c., 8194

At the public hearing, in January 1961, Ferro Enamels Canada Limited informed the Board that the company imports about 20,000 pounds of stannic oxide annually. About 90 per cent is for resale, for use as an opacifier of glass in pottery; the remainder is used by the company in the production of pigments for the ceramic industry. The discussion at the hearing indicated that stannous oxide was imported into Canada from the U.S.A. However, no information was made available to the Board to indicate the use made of the stannous oxide from the U.S.A., nor of the 20,000 pounds of stannic oxide imported annually by companies other than Ferro Enamels.

(1) Transcript, Vol. 17, p. 2450

(2) Same, Vol. 17, p. 2394

(3) Explanatory Notes to the Brussels Nomenclature 1955, Vol. 1, p. 168

Tariff Considerations

Tin oxides are entered under item 208r, "oxide of tin or of copper", Free, B.P. and 15 p.c., M.F.N. At the public hearing, the Ferro Enamels spokesman said, "Since stannic oxide is not made in Canada, we support continuation of the existing rates of duty ..." He indicated that these rates should apply to an item worded like heading 28.26 of the B.T.N.⁽¹⁾

The spokesman did not state why these rates would be appropriate. His company imported its supplies from the U.K. and would not be affected by the 15 p.c., M.F.N. Tariff.

At the hearing in September 1962, the Canadian Pharmaceutical Manufacturers Association included stannic oxide in a list of chemicals of minor economic importance to its members. The Association requested rates of Free, B.P., and 15 p.c., M.F.N., unless otherwise provided, for chemicals not made in Canada, when imported for use in the manufacture of pharmaceutical products.⁽²⁾

No other representations were made to the Board relating specifically to tin oxides.

LEAD OXIDES; RED LEAD AND ORANGE LEAD - B.T.N. 28.27

The Products

There are three oxides of lead: lead oxide, PbO , (also known as litharge, massicot and lead monoxide); lead saline oxide, approximate formula Pb_3O_4 (also known as red lead, orange lead, lead tetroxide and minium; lead dioxide, PbO_2 , (also known as puce oxide and plumbic anhydride). Lead oxide is produced mainly by heating metallic lead in the presence of air; it is used in North America principally in the manufacture of the common lead-acid storage batteries, and also in the production of chemicals, pigments, insecticides and other products. Red lead is usually produced from unmelted lead oxide; it is used mostly in the manufacture of pigments, anti-rust paints, crystal glass and optical glass.

"The term 'orange lead' is applied either to a very pure saline oxide, more highly coloured and less dense than the common variety, or to lead oxides still containing lead carbonate from the cerussite used in their preparation."⁽³⁾ Lead dioxide (puce oxide, plumbic anhydride) is produced from red lead; its major use is in pyrotechnics. Litharge and red lead are commercially by far the most important chemicals. Both are available in various grades for particular uses.

The terms applied to various qualities of litharge and red lead appear to be used loosely. The presence or absence of very small amounts of impurities and such physical characteristics as particle size are important in the selection of a grade for a specific application.

(1) Transcript, Vol. 18, p. 2587

(2) Same, Vol. 87, p. 13290, 13321

(3) Explanatory Notes to the Brussels Nomenclature, 1955, Vol. 1, p. 169

Commercially, battery litharge is the most important kind of lead oxide in Canada. This product is usually a mixture of about 65 per cent lead oxide and 35 per cent free lead. A grade called "commercial litharge" contains 99.5 per cent or more of lead oxide. Assay litharge is a product of high purity, distinguished by having a precisely established content of silver. Canary litharge is lead oxide with a very low content of free lead.

Red lead (Pb_3O_4) is sold in various grades which specify the red lead (Pb_3O_4) content. Manufacturers may have their own specialty red leads which are claimed to have unique properties. Red lead has its major use in paints and is used to some extent in batteries. Orange lead or orange mineral is similar chemically to red lead and is used in paints and mirror backing. Glassmakers' red lead is a special grade, low in iron, for the manufacture of crystal glass.

Lead metal (pig lead) is the principal item of cost in the production of either litharge or red lead. An industry spokesman said that the cost of pig lead constituted about 90.2 per cent of the total cost of litharge and about 89 per cent of the cost of red lead. The additional processing required to make red lead from litharge adds about 10 per cent to the costs of processing.⁽¹⁾ Not all companies that produce litharge make red lead.

The Industry

Lead oxides were first produced in Canada, for sale, by the Carter White Lead Company Limited, at Montreal, around 1909. In 1946, Canada Metal Company Limited, another merchant-producer, began production at Toronto, and in 1957 McArthur Irwin Limited, the third merchant-producer, came into operation in Montreal. Canada Metal established a second plant at Winnipeg in the fall of 1955. In addition, Prestolite Battery Company Limited and Electric Storage Battery Company Canada Limited each manufactures lead oxides captively at plants in Calgary and Toronto. The Autolite Battery Company Limited also produces litharge captively at Toronto, and the Hart Battery Company Limited, which was acquired by the Electric Storage Battery Company in mid-1963, produces captively at St. Johns, Quebec. The Toronto plant of Prestolite has been in operation since 1929 and the Toronto plants of Electric Storage Battery and Autolite have been in existence for many years, as has the Hart plant at St. Johns. The two Calgary plants began operations in 1955.

The capacity of the merchant-producers' plants was said to be for 26,000 tons of lead oxides annually; the capacity of the captive plants was given as about 10,000 tons annually in 1961. Thus, total Canadian productive capacity in 1961 was about 36,000 tons per year. The battery manufacturers who produce captively appear to operate at or near capacity, and some purchase additional requirements of battery litharge either from the merchant-producers or from suppliers in the U.S.A. They also purchase the relatively small amounts of red lead which they use. The available information indicates that there was no change in merchant capacity between 1961 and 1964, but that output of battery manufacturers has increased since 1961.

(1) Transcript, Vol. 18, p. 2630-1

In 1938 and 1939, while Carter White Lead was the only merchant-producer of litharge and red lead in Canada, imports of litharge were 1,000 to 1,100 tons annually, and of red lead, 225 tons per year. In 1945, imports of litharge reached a peak of 1,763 tons. Imports of red lead were only 32 tons in that year, considerably less than the 293 tons that had been imported in 1941 or the 463 tons in 1937. It was in 1946 that Canada Metal established its plant at Toronto. Some captive plants were said to have come into operation at about the same time.⁽¹⁾

The size of the Canadian market, at that time, is not known. However, less than 2,000 tons of litharge and red lead, combined, were imported in the peak years, so that Canada Metal would appear to have anticipated a strong export demand, in conjunction with a rapidly developing domestic market. The existence of captive plants owned by the battery manufacturers meant that Canada Metal would have to share the then relatively small domestic, commercial market with Carter White Lead. In 1955, Canada Metal's second plant at Winnipeg, and in 1957 McArthur Irwin's plant at Montreal came into operation. In the years immediately preceding the establishment of these plants, imports of litharge did not reach 1,200 tons in any year and imports of red lead did not exceed 400 tons. Any anticipations of high levels of export trade were not realized and, as a result, Canadian merchant-producers have been supplying essentially only the domestic commercial market since their establishment, except in the two or three years immediately following the Second World War.

The Market

The Canadian consumption of all types of litharge and red lead was estimated to be approximately 16,000 tons, valued at nearly \$4 million in 1959. The available data suggest that there has been some increase since that time. Litharge accounts for about 15,000 tons of the use and red lead for about 1,300 tons. Some imported lead dioxide is also consumed in Canada but the amount involved is very small.

A large part of the demand for litharge is supplied by the captive plants of the battery manufacturers who were said to produce about 9,500 tons annually, almost two-thirds of the total consumption of the product. The commercial market for litharge is for about 6,000 tons annually. Canadian merchant-producers supply most of this, with imports, which averaged 830 tons in the five years, 1959-63, accounting for about 14 per cent of the estimated commercial sales in Canada.

Of the estimated market of about 1,300 tons of red lead, imports supplied an average of 260 tons from 1959 to 1963, the remainder being from domestic production.

(1) Transcript, Vol. 18, p. 2638

Consumption of Purchased Litharge, by Industry
1960-62

	<u>1960</u>	- <u>1961</u> - tons	<u>1962</u>
Industrial Chemicals	952	1,060	929
Paints & Varnish	138	150	169
Other Chemical	<u>189</u>	<u>163</u>	<u>194</u>
Total Chemical	1,279	1,373	1,292
 Batteries	 2,561	 3,131	 4,611(b)
Petroleum Products	170	122	125(b)
Rubber	48	89	104(b)
Misc. Textiles	<u>47</u>	<u>62</u>	<u>65(b)</u>
Total of above (a)	4,105	4,777	6,197

(a) The available data do not account for total consumption
(b) Estimated

Source: Dominion Bureau of Statistics, various publications

Battery manufacturers are the major consumers of litharge and account for from two-thirds to three-quarters of the sales. The chemical industry, the other major consumer, purchases from 20 to 25 per cent of the total and the petroleum, textile and rubber industries account for most of the remaining commercial sales. The principal consumer of red lead is the paint and varnish industry; the only other use of importance is in the manufacture of batteries. The paint industry's consumption averaged about 760 tons, 1959 to 1962; the battery industry used between 80 and 380 tons annually in those years.

As noted, the total annual demand in Canada for litharge and red lead is currently about 16,000 to 17,000 tons, of which approximately 10,000 to 10,500 tons is captively produced and only 6,000 tons is purchased. The storage battery industry is both the largest producer of lead oxide (about 60 to 65 per cent of the total) and the largest consumer (about 85 per cent or more of the total). The commercial market is about 6,000 tons annually of which the battery industry's purchases account for 60 to 75 per cent. Of the 6,000 tons that are sold in Canada, Canadian production supplies about 5,000 to 5,500 tons and imports from 500 to 1,100 tons. The chemical products industries (including paints) are the only other major purchasers of litharge. Imports of litharge are only a small part of total Canadian use (about six to seven per cent), but are from 10 to 18 per cent of the much smaller commercial market for the product. Both the Canadian and British manufacturers who appeared before the Board said that most, or all, imports of litharge from the U.S.A. were of battery litharge; that imports of litharge from the U.K. were of a much higher content of lead oxide for non-battery use and would be better described as "commercial litharge." (1) Until 1962, imports were almost entirely from the U.K. and the U.S.A.

(1) Transcript, Vol. 18, p. 2601, 2657

Imports for use in the manufacture of storage battery plates are entered free of duty from M.F.N. countries but are dutiable at 15 p.c., M.F.N., if for other uses. This, in conjunction with the statements by industry spokesmen that imports from the U.K. were for uses other than in batteries permits estimates to be made of the quantities that were imported for use in batteries. These estimates indicate that imports for battery plates were from about 730 to 870 tons per year in the four years 1956-59 and then declined to between 200 and 350 tons annually in the three years, 1960-62. In 1963, duty-free imports from M.F.N. countries were 530 tons. In most of this period, 1956-61, imports for other uses were relatively stable at between 300 to 370 tons annually. In 1962 they rose to 419 tons, and in 1963 to 554 tons, mainly reflecting imports from Mexico at relatively low prices.

Imports from Mexico were first reported in 1961, but by 1963 Mexico was the major supplier of imported litharge. The average value of the imports from Mexico in 1963 of \$9.17 per hundredweight, was well below the \$14.49 per 100 pounds for those from the U.K., or the \$18.58 per hundredweight for those from the U.S.A. Similar large differences in average value were also recorded in 1964.

Imports of Litharge^(a) by Country of Origin,
Selected Years, 1937-64

	<u>U.K.</u>	<u>U.S.A.</u>	<u>Mexico</u>	<u>Total</u>	
		- tons -		tons	\$'000
1937	633	647	-	1,280	194
1940	530	588	-	1,118	179
1945	156	1,607	-	1,763	316
1947	94	151	-	245	83
1951	64	390	-	454	217
1955	376	677	-	1,075	365
1959	241	916	-	1,157	326
1961	208	302	1	511	155
1962	212	318	242	772	204
1963	203	383	499	1,084	292
1964(a)	258	546	716	1,520	470

(a) In 1964 includes red lead which was previously included in s.c. 8172

Source: D.B.S., Trade of Canada, Imports, s.c. 8171

Imports of litharge are currently entered only in Quebec, Ontario and British Columbia. Imports from the U.S.A. are almost entirely into British Columbia and Ontario. About three-quarters of the imports from the U.K. were entered in Quebec; the remainder was divided roughly equally between British Columbia and Ontario. Imports from Mexico were largely into Quebec and Ontario.

The Canadian manufacturers said producers in the U.S.A. have a freight cost advantage on deliveries of litharge to Alberta

and British Columbia.⁽¹⁾ The lowest freight rate from Toronto, Montreal or Winnipeg, to Vancouver, in 1960, was \$2.25 per 100 pounds compared with only 45 cents per hundredweight from Seattle, Washington. This difference of 1.8 cents a pound freight was equivalent to approximately 12 per cent of the average value of imports from the U.S.A. in 1960. In view of the statement by the Canadian manufacturers that "There are no imports [from the U.S.A.] in the east",⁽²⁾ imports from the U.S.A. entered in Ontario may be of grades not made in Canada.

Imports of Litharge, by Country of Origin
and Province of Entry, 1959-63

	<u>Quebec</u>	<u>Ontario</u>	<u>B.C.</u>	<u>Canada</u>
		- tons	-	
<u>From U.S.A.</u>				
1959	25	259	560	916 ^(a)
1960	1	126	253	379
1961	*	167	132	302
1962	-	144	174	318
1963	4	120	259	383
<u>From U.K.</u>				
1959	172	42	27	241
1960	200	5	31	247
1961	151	25	31	208
1962	163	5	29	212
1963	147	22	33	202
<u>From Mexico</u>				
1961	-	-	1	1 ^(a)
1962	150	22	10	242 ^(a)
1963	203	254	1	499 ^(a)
<u>From All Countries</u>				
1959	197	301	587	1,157
1960	201	131	284	626
1961	151	192	163	511
1962	313	170	212	772
1963	354	397	293	1,084

(a) Includes 60 tons into Nova Scotia in 1962 and 40 tons in 1963; includes 72 tons into Alberta in 1959

Source: D.B.S., s.c. 8171

(1) Transcript, Vol. 19, p. 2728

(2) Same, Vol. 18, p. 2627

At the hearing in January 1961, British suppliers claimed that some of the litharge imported from the U.K. was of grades that were not available from Canadian production. This was disputed by the Canadian producers, but the issue was not resolved. Statements made at the hearing suggest that purchasers appear prepared to pay a premium for litharge from the U.K. At one point, a spokesman for the Canadian producers said:

"We have never been able to understand why or how U.K. litharge always sold for higher prices than the red lead prices, whereas both Canadian and U.S. producers of oxide find that red lead, by the very nature of the processing ... does cost more to make."(1)

Imports of litharge from the U.K. are less than two per cent of the estimated total Canadian use and nearly four per cent of estimated commercial sales. Most, or all, are for uses other than in storage batteries.

Imports of Red Lead

Imports of red lead rose to a post-war peak of almost 500 tons in 1958, but then declined steadily to about 160 tons in 1963. Imports are largely from the U.K. Imported red lead has been between 10 and 20 per cent of estimated Canadian use in recent years.

Imports of Red Lead, by Country of Origin,
Selected Years, 1945-63

	<u>U.K.</u>	<u>U.S.A.</u>	<u>Total</u>	
	- tons	-	tons	\$'000
1945	2	30	32	7
1947	-	18	18	7
1951	33	54	87	42
1955	145	7	152	50
1959	332	5	337	85
1961	226	8	234	60
1962	152	21	173	41
1963	148	11	159	39

Source: D.B.S., Trade of Canada, Imports, s.c. 8172

Imports from the U.K. are entered mainly in Quebec and British Columbia. U.K. suppliers said ocean freight to British Columbia and Newfoundland is cheaper than freight costs from Montreal and Toronto to these market areas.(2) In January 1961, ocean freight from the U.K. to Vancouver was said to be \$1.58 per 100 pounds compared with \$2.25 for the rail haul from either Toronto or Montreal. Ocean freight to St.

(1) Transcript, Vol. 19, p. 2743

(2) Same, Vol. 18, p. 2676

John's, Newfoundland was given as 90 cents per 100 pounds and the comparable rates from Montreal as \$1.76 in summer and \$2.65 in winter.⁽¹⁾

Imports of Red Lead from the U.K., by Province of Entry,
1957-63

	<u>Nfld.</u>	<u>Quebec</u>	<u>Ontario</u> - tons -	<u>B.C.</u>	<u>Canada</u>
1957	6	219	26	122	374
1958	7	233	120	117	478
1959	6	129	79	119	332
1960	8	193	68	113	381
1961	6	141	19	61	226
1962	2	35	21	94	152
1963	1	-	11	136	148

Source: D.B.S., s.c. 8172

As in the case of litharge, the British manufacturer said some of the imports of red lead from the U.K. were of grades not manufactured in Canada. This also was disputed by the Canadian producers.

Exports

Exports were said to have been small except in the years immediately following the war.⁽²⁾ Canadian export data are not available for lead oxides, but U.S.A. publications record imports of litharge into that country from Canada. In the past few years they have varied widely from 80 to almost 600 tons. In the three years, 1962-64, they averaged 230 tons annually.

Pricing Policy and Prices

Because the cost of lead metal is about 90 per cent of the total cost of litharge and red lead, manufacturers of lead oxides base their prices of oxides on the price of pig lead. Manufacturers said they establish a margin to cover other costs of processing and distribution and add this to the price of lead to arrive at approximations of their selling prices. This margin varies with different products and grades.

In October 1960, the manufacturers' margin in Canada was said to be 1.45 cents a pound for battery litharge and 3.45 cents a pound for commercial litharge.⁽³⁾ At that time the margin for commercial litharge was 3.67 cents a pound in the U.S.A. and 3.23 cents a pound in the U.K.⁽⁴⁾

(1) Transcript, Vol. 18, p. 2674-5

(2) Same, Vol. 18, p. 2637

(3) Same, Vol. 18, p. 2615, 2633

(4) Same, Vol. 18, p. 2615

It is not unusual for prices of pig lead on the London Metal Exchange to change daily; Canadian prices, although they are closely related, are much more stable. For example, Canadian prices of pig lead were changed only three times in 1960, three times in 1961 and five times in 1962. The price of pig lead is usually higher in Canada than in the U.K. but generally lower than in the U.S.A. The spokesman for the Canadian producers said that the U.S. price for pig lead varied from "almost parity to a two cent differential upward,"⁽¹⁾

At the public hearing, the spokesman for a major manufacturer of lead oxides in the U.K. said his company changes its prices of the oxides only when there has been a substantial change in the price of pig lead. Even so, his company changed prices about nine times in 1960. He said 1960 was a fairly stable year and sometimes lead oxide prices were changed every fortnight.⁽²⁾ In 1960, Canadian lead oxide manufacturers changed their prices only two or three times.⁽³⁾

Prices of Canadian lead oxides are not published. However at the public hearing it was said that in October 1960, the price of red lead in Canada was \$13.95 per 100 pounds delivered in Montreal or Toronto. The comparable price of red lead from the U.K. was also said to be \$13.95 per hundredweight in Montreal.⁽⁴⁾

Prices of Commercial Litharge and Red Lead, in the U.S.A.,
1958-64

	Commercial Litharge		Red Lead, 97%	
	Powdered, in Barrels		Pb ₃ O ₄ , in Barrels	
	<u>Carloads at Works</u>		<u>Carloads at Works</u>	
	<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>
	\$U.S. per cwt.		\$U.S. per cwt.	
1958	14.75	12.25	15.45	13.20
1959	14.75	12.75	15.45	13.45
1960	13.75	13.25	14.45	13.95
1961	13.25	12.25	13.95	12.95
1962	11.75	11.75	12.45	12.45
1963	15.25	12.75	15.95	13.45
1964	15.25	15.25	15.95	15.95

Source: Oil, Paint and Drug Reporter

Tariff Considerations

Litharge is entered under tariff items 241 and 241a; red lead is entered under item 242.

(1) Transcript, Vol. 18, p. 2647

(2) Same, Vol. 19, p. 2706

(3) Same, Vol. 19, p. 2723

(4) Same, Vol. 18, p. 2660

	<u>British Preferential Tariff</u>	<u>Most- Favoured- Nation Tariff</u>
<u>Item 241 (in part)</u>		
Litharge and mixtures or combinations of litharge with other materials, ... to contain not less than 50 per centum by weight of litharge, ... for use exclusively in the manufacture of storage battery plates.....	Free	Free
<u>Item 241a</u>		
Litharge, n.o.p.	Free	15 p.c.
<u>Item 242 (in part)</u>		
Dry red lead; orange mineral,	Free	12½ p.c.

At the public hearing in January 1961, three Canadian manufacturers, Canada Metal Company Limited, Carter White Lead Company of Canada Limited and McArthur, Irwin Limited, jointly proposed that item 241 and that part of item 242 which deals with red lead and orange mineral be eliminated, and that these deletions be replaced by an item worded like heading 28.27 of the Brussels Tariff Nomenclature, "Lead Oxides", with rates of 15 p.c., B.P. and 20 p.c., M.F.N.(1)

Associated Lead Manufacturers Limited, Dillons Chemical Company Limited and The Pigment and Chemical Company Limited also made a joint proposal. The latter two companies are agents in Canada for Associated Lead Manufacturers (A.L.M.) of Britain. These three companies proposed that free entry of litharge and red lead, from the U.K. be continued. They made no recommendation regarding the M.F.N. rate.(2)

General Paint Corporation of Canada Limited, Spectrum Chemicals Limited and Standard Manufacturing Company Limited recommended no change in the present rates for these products.(3)

At an earlier hearing, in September 1960, the Consolidated Mining and Smelting Company of Canada Limited urged that the Board take no action which is likely to cause "reciprocal increases in duties by any country to which Canadian products are exported" and that no action be taken, "such as the modification or deletion of 'end-use' items, which would have the effect of increasing the costs of production of the Company or similar industry."(4) The company listed litharge as a chemical which it purchased and used in its operations.

(1) Transcript, Vol. 18, p. 2596-8

(2) Same, Vol. 18, p. 2679

(3) Same, Vol. 19, p. 2745-7

(4) Same, Vol. 5, p. 715

The Canadian Pulp and Paper Association listed litharge as a material used by its members and urged that there be no increase in existing rates.⁽¹⁾

The Canadian Pharmaceutical Manufacturers Association expressed an interest in lead monoxide. The Association included the product in a list of minor chemicals used and proposed rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for chemicals not made in Canada and used for the manufacture of pharmaceuticals, and rates of 15 p.c., B.P. and 20 p.c., M.F.N., when the products are made in Canada.⁽²⁾

In a letter, dated June 4, 1964, Gould-National Batteries of Canada Limited expressed its interest in the tariffs for litharge and red lead, in the following terms:

"In view of the fact that we do not produce our own litharge or red lead requirements, but rather purchase them from a Canadian source, we feel very strongly that any attempt to institute a Tariff rate or increase the present Tariff rates would be detrimental to our interest."

Tariff item 241 applies to litharge and, in addition, to "mixtures or combinations of litharge with other materials, ... to contain not less than 50 per centum by weight of litharge." Heading 28.27 of the B.T.N. would apply to litharge but not to the mixtures or combinations, though red lead and orange lead do not need to be separate chemically defined compounds for classification by heading 28.27. The spokesman for the Industry Committee commented as follows with respect to mixtures:

"While it may be convenient to consider tariffs for such preparations at this time, the Committee recommends that they be classified elsewhere in the tariff than under heading no. 28.27.

"Q.: Will there be a Committee recommendation in due course as to where 'elsewhere' is?

"A.: Yes, there might be in the discussion. There might be some of these things come up. They might be mixtures, for example, or they might be some of the materials and even parts for batteries that are not in the reference at all."⁽³⁾

In fact, there was no further reference made to the problem of classifying these "mixtures or combinations". The products are probably classified by heading 38.19 of the B.T.N. which applies to:

(1) Transcript, Vol. 85, p. 13006

(2) Same, Vol. 87, p. 13321

(3) Same, Vol. 18, p. 2590-1

"a wide range of products of the chemical or allied industries which are not classified in other headings of Sections V [mineral products], VI [products of the chemical and allied industries] or VII [artificial resins and plastic materials, cellulose esters and ethers, and articles thereof: rubber, synthetic rubbers, and articles thereof] or of other Sections of the nomenclature."(1)

The proposal of the lead oxide manufacturers would increase the B.P. rates for litharge and red lead from Free to 15 p.c. and would increase the M.F.N. rate for litharge from Free, under tariff item 241, to 20 p.c. and from 15 p.c., under tariff item 241a to 20 p.c. For red lead, the M.F.N. rate would be raised from 12½ p.c., under item 242 to 20 p.c.

Apart from the end-use proposal of the Pharmaceutical Manufacturers Association, all of the other proposals would leave the existing rates under items 241, 241a and 242 unchanged.

The major argument of the Canadian manufacturers in support of their proposals was that they paid more for their pig lead than their external competitors and therefore needed protection to offset this advantage. Their spokesman also referred to the larger scale of production in the U.K. and the U.S.A. and the freight advantage of U.S. producers on shipments to Western Canada.

The evidence indicates that prices of pig lead at Montreal and Toronto are usually higher than those quoted on the London Metal Exchange, but are almost always lower than those quoted in the U.S.A. However, it would usually be cheaper to buy lead from Canadian producers than to purchase it from dealers in the U.K.

If the definition of litharge of B.T.N. heading 28.27 corresponded with that of the litharge described by tariff items 241, 241a and 242, the proposals of the manufacturers of lead oxides would compare with the existing situation, approximately as shown below:

<u>Product</u>	<u>Existing Situation</u>			<u>Proposed Rate</u>	<u>Imports Affected</u>	
	<u>Item</u>	<u>Tariff</u>	<u>Rate</u>		<u>Est. Aver. Annual Imports 1960-63</u>	<u>tons \$'000</u>
Litharge	241	M.F.N.	Free	20 p.c.	352	107
Litharge	241a	B.P.	Free	15 p.c.	218	62
Litharge	241a	M.F.N.	15 p.c.	20 p.c.	179	41
Red Lead	242	B.P.	Free	15 p.c.	227	57
Red Lead	242	M.F.N.	12½ p.c.	20 p.c.	12	5
Total					988	272

(1) Explanatory Notes to the Brussels Nomenclature, 1955, Vol. 1, p. 365

If the proposed increases in rates resulted in Canadian lead oxides displacing all imports of litharge and red lead, it would make available to Canadian producers an additional market for about 1,000 tons valued at \$272,000 annually. This market would be shared by three companies and four plants. An additional market for about 1,000 tons annually would do little to correct the problem of excess capacity in the Canadian industry, an excess which the producers estimated at about 21,000 tons annually. The establishment of captive plants many years ago made the export market the only significant outlet for the industry's over-capacity.

Although the proposed rates might result in Canadian products displacing some of the imports, they would not be effective in keeping out imports from Mexico, nor imports from Britain into British Columbia and Newfoundland. In the period, 1960-63, these imports averaged 217 tons annually. Furthermore, the proposed increases might not be sufficient to keep out imports from the U.S.A. under items 241a and 242 which are already entered at rates of 15 p.c., and 12½ p.c., respectively, an average of 87 tons per year. The manufacturers proposal might therefore result in a maximum increase in sales of only about 700 tons annually which, if shared by the three companies, would be unlikely to benefit any of them significantly.

However, it is not clear that the proposed rates would in fact ensure even this amount to domestic producers. The British manufacturer said that some of the litharge and red lead that A.L.M. sold in Canada was of grades not available from Canadian production. The evidence indicates that Canadian consumers now purchase these products although Canadian-made products are available at a lower cost. This would tend to substantiate the claim of A.L.M. that these products are somehow unique, at least in the opinion of some users.

Moreover, some battery manufacturers may be importing litharge which contains special additives. The Canadian producers said captive production became economic when battery output reached about 1,000 units a day. One or more manufacturers in Canada have now reached or exceeded this level but are still purchasing all their requirements of litharge. A significant increase in the duty, if reflected in the price of either domestic or imported material, might result in the establishment of more captive plants. At the hearing, the spokesman for the Canadian litharge manufacturers said:

"There is the other element that the manufacturing of batteries seems to be a matter of pride with these companies, and they like to feel that they have something special; whereas, if we were supplying all companies, there are certain technical aspects which perhaps they feel we couldn't introduce and which they feel must be of benefit in producing their own; their own certain additives, for example."(1)

If the rates proposed by the producers for red lead were implemented, they would gain an advantage for 122 tons annually which are now imported from Britain into provinces other than British Columbia or Newfoundland and for 12 tons annually, imported from the U.S.A.

(1) Transcript, Vol. 18, p. 2624-5

They would remain at a disadvantage for 105 tons from the U.K. entered annually in British Columbia and Newfoundland.

The emergence of Mexico as the major exporter of litharge to the Canadian market presents a serious threat to domestic producers. The average values of imports of litharge, which are given below, indicate that even a rate of 20 p.c. is likely to have little effect on imports from this country, if it is assumed that Canadian prices would approximate those in the U.S.A. or the U.K.

Average Value of Imports of Litharge,^(a) by Country of Origin,
1961-64

	U.K.		U.S.A.		Mexico	
	tons	\$ per cwt.	tons	\$ per cwt.	tons	\$ per cwt.
1961	208	13.92	302	16.05	1	10.67
1962	212	13.78	318	16.23	242	8.84
1963	203	14.49	383	18.58	499	9.17
1964 ^(a)	258	17.38	546	20.16	716	11.18

(a) In 1964 includes imports of red lead

Source: D.B.S., Trade of Canada, Imports, s.c. 8171

In 1963, the average value of Mexican litharge was about 35 per cent less than the apparent price of Canadian litharge and was even substantially lower than the cost in Canada of pig lead, the raw material. In 1964, the average value of Mexican imports was 32 per cent less than the price of battery litharge in Canada.

Associated Lead Manufacturers argued that entry from the U.K., for litharge, should continue to be free of duty because only a small part was competitive with Canadian production.⁽¹⁾ Its spokesman claimed that a large part of the litharge from the U.K. was of grades not produced in Canada. He also said the imposition of a duty on imports from the U.K. would penalize consumers in coastal areas such as British Columbia and Newfoundland. He contended that even with a duty of 15 p.c., British manufacturers would still have an advantage of 90 cents a hundredweight in British Columbia, thereby penalizing users there to no apparent advantage to Canadian producers of lead oxides.

The others who made representations to the Board were General Paint Corporation, Spectrum Chemicals, Standard Manufacturing, Consolidated Mining and Smelting, the Canadian Pulp and Paper Association and the Canadian Pharmaceutical Manufacturers Association. In general they opposed any increase in rates because this would increase their costs. The first three companies indicated that supplies from the U.K. would continue to be cheaper but would cost an additional 15 per cent if the rates proposed by the Canadian producers were imposed.

(1) Transcript, Vol. 18, p. 2677, 2679

No representations were made on lead dioxide or other products which are classified under B.T.N. heading 28.27. As far as is known, most of these are likely classified under tariff item 208t, duty-free under the B.P Tariff and dutiable at 15 p.c. under the M.F.N. Tariff.

In its general submissions the Industry Committee proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., for products which were not the subject of representations by others. This proposal would apply to lead dioxide and perhaps other products of B.T.N. heading 28.27. The Committee did not indicate why these rates would be appropriate specifically for the products to which they would apply.

HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SALTS;
OTHER INORGANIC BASES AND METALLIC OXIDES, HYDROXIDES AND PEROXIDES
B.T.N. 28.28

INTRODUCTION

Heading 28.28 of the Brussels Tariff Nomenclature applies to a large number of chemicals. Some of these were the subject of representations to the Board; others were the subject mainly of expressions of general end-use interests. In addition, many products classified by this heading were not brought to the Board's attention, although some of them would appear to have considerable economic importance.

The discussion which follows deals first with those products which were specifically the subject of various submissions. They include:

antimony trioxide	molybdenum trioxide
cupric oxide	nickelous oxide
cuprous oxide	zirconium oxide
lithium hydroxide	

This is followed by a review of various end-use interests which were expressed in the following products:

bismuth trioxide	calcium oxide
cadmium oxide	hydrazine hydrate
calcium hydroxide	mercuric oxide

The third section comments on other products of heading 28.28 which are known to have some economic importance. These include:

antimony pentoxide	germanium dioxide (oxide)
bismuth hydroxide	hydrazine hydrochloride
calcium peroxide	hydrazine monohydrobromide
cupric hydroxide	hydrazine monohydrochloride
	hydrazine sulphate

ANTIMONY TRIOXIDE

Antimony trioxide, antimony oxide or antimony white, is a white crystalline powder manufactured either from antimony metal or directly from antimony ore. It is not made in Canada and, until 1962, the domestic market was supplied by imports originating mainly in the U.K. and the U.S.A. Since 1962, China has also been a major source of supply. Smaller quantities originate in Belgium and Luxembourg and occasionally in West Germany.

The Canadian market has been growing rapidly in the past ten years; in 1964 imports were 710,000 pounds, valued at \$331,000, more than $2\frac{1}{2}$ times the quantity and almost five times the value of those in 1954. The U.K. is the largest supplier and usually accounts for more than half the total.

Imports of Antimony Oxide, By Country of Origin,
Selected Years, 1954-64

	<u>U.K.</u>	<u>U.S.A.</u>	<u>West Germany</u>	<u>Belgium & Luxembourg</u>	<u>China</u>	<u>Total</u>	
			thousand pounds			'000 lb.	\$'000
1954	181	74	22	2	-	279	68
1957	247	55	44	20	-	366	87
1959	300	80	88	43	-	511	111
1960	253	139	-	44	-	437	97
1961	171	100	-	44	-	359	90
1962	332	128	-	67	100	628	164
1963	512	82	-	11	44	649	183
1964	404	122	45	29	110	710	331

Source: D.B.S., Trade of Canada, Imports, s.c. 8179

In Canada, antimony trioxide is used mainly in the production of plastics and paints. It is also used in coating fabrics, in porcelain glazes, in rubber and in the production of titanium dioxide. The import data suggest that between half and three-quarters of the use in Canada is in the manufacture of plastics, particularly for the flame-proofing characteristics which antimony trioxide imparts.

Tariff Considerations

Antimony oxides are entered under tariff item 242, Free, B.P. and $12\frac{1}{2}$ p.c., M.F.N., and under end-use item 921 (for plastics), free of duty under both the B.P. and M.F.N. Tariffs.

At the public hearing, in January 1961, Associated Lead Manufacturers of London, England (A.L.M.) and The Pigment and Chemical Company Limited of Montreal, Quebec (its Canadian distributor) proposed

that insofar as it relates to antimony trioxide, end-use item 921 be deleted and the existing rates under item 242 be maintained.⁽¹⁾

Standard Manufacturing Company Limited of St. John's, Newfoundland, urged that the present rates under item 242 remain unchanged.⁽²⁾

More than half of the imports of antimony oxides are typically from the U.K., free of duty under both items 242 and 921. Imports from M.F.N. countries averaged 203,000 pounds annually, in the five years, 1959-63, of which only nine per cent was dutiable under item 242 and the remainder were entered free of duty under item 921.

The proposal of A.L.M. would affect only the free imports from M.F.N. countries, under item 921. These averaged about 185,000 pounds, valued at \$40,000 per year, in the five-year period 1959-63. If these could not be imported under item 921 they would become subject to the M.F.N. duty of $12\frac{1}{2}$ p.c., under tariff item 242. A.L.M. indicated that this was the purpose of its proposal and that the company would thus be protected from "unfair" trading practices of communist countries or of other countries who use antimony metal, which they import from communist countries. A possible effect of the proposals by A.L.M. would be to make the U.K. virtually the sole supplier of the Canadian market. A.L.M. was the only manufacturer of antimony trioxide in the U.K., at the time of the hearing.

The principal argument of A.L.M., in support of its proposals, was that either cheap antimony metal or antimony ore, from communist countries, was being used in the manufacture of antimony trioxide entered into Canada from other European countries. The company's proposal was intended to offset the claimed disadvantage of the U.K. industry of higher costs of the principal raw material.

The relevance of this argument is not apparent. Only one European country other than the U.K. and Belgium has supplied the Canadian market regularly. Imports from Belgium have not been a large part of the total and they have not increased in the past five years. In the same period, 1960-64, imports from the U.K. have increased substantially. Moreover, although almost all imports from Belgium were entered free of duty, in 1964 they were less than one-tenth as large as those from the U.K., in spite of all the advantages A.L.M. attributed to Belgian production.

Standard Manufacturing supported its recommendation against change in the rates for antimony oxides under item 242, saying that its costs of manufacturing paints would be higher if the rates were increased.

The available information indicates that natural antimony oxides, which are classified in heading 26.01 of the B.T.N., would also be entered under tariff item 242. If an item worded like heading 28.28 were established and the reference to antimony oxide deleted from item 242, the natural antimony oxides would probably become classified under item 711 at higher rates of duty, unless some other provision was made for their classification.

(1) Transcript, Vol. 19, p. 2755, 2768

(2) Same, Vol. 19, p. 2747

Other Antimony Oxides

Antimony trioxide appears to be the only oxide of antimony of commercial importance in Canada. A pentoxide and a tetroxide are known but no representations were made specifically concerning them. Because no other recommendations were made for these products, the Industry Committee's general rate proposal of 15 p.c., B.P. and 20 p.c., M.F.N., would be the only one relevant. The Committee supported these rates in general submissions without specific reference to these products.

COPPER OXIDES

Only two chemicals in this group were brought to the attention of the Board, cupric oxide and cuprous oxide. They were said to be the only ones of commercial significance.⁽¹⁾ Cupric oxide (black copper oxide) is utilized in the production of porcelain enamel frits and in pigments for the porcelain enamel industry. Very little of this material is used in Canada.⁽²⁾ Cuprous oxide (red copper oxide) is used in the manufacture of paints for its fungicidal and rust-inhibiting properties.⁽³⁾ Neither product is known to be made in Canada. All Canadian supplies are, therefore, imported, principally from the U.K., but also from the U.S.A. In the period from 1953 to 1961, annual imports averaged 166,000 pounds valued at close to \$71,000. They increased sharply after 1961 and averaged 383,000 pounds, valued at \$171,000 per year. Between 92 and 96 per cent of the total is ordinarily from the U.K.; however, in 1964 the U.K. supplied only 66 per cent of imports. The very much higher average values of imports from the U.S.A. suggest that the product that is imported is frequently not the same as that supplied by British manufacturers.

Imports of Copper Oxide, by Country of Origin,
Selected Years, 1953-64

	U.K.			U.S.A.			Total	
	'000 lb.	\$'000	\$ per lb.	'000 lb.	\$'000	\$ per lb.	'000 lb.	\$'000
1953	103	43.9	.42	21	10.8	.51	124	54.7
1955	130	64.2	.49	19	10.3	.53	149	74.4
1957	171	68.7	.40	15	13.6	.90	186	82.3
1959	106	39.5	.37	9	6.0	.69	115	45.5
1961	190	74.9	.39	8	3.9	.51	198	78.8
1962	271	107.9	.40	15	15.5	1.04	286	123.5
1963	502	199.0	.40	30	21.2	.72	542	224.1
1964	210	102.2	.49	90	56.2	.62	320	166.6

Source: D.B.S., Trade of Canada, Imports, s.c. 8188

(1) Transcript, Vol. 19, p. 2749

(2) Same, Vol. 19, p. 2772

(3) Same, Vol. 19, p. 2774

At the hearing, in January 1961, the spokesman for the Canadian Paint Varnish and Lacquer Association (C.P.V.L.A.) said that the paint industry used about 150,000 pounds valued at \$57,000 in 1959. This suggests that most imports of copper oxides are for use by the paint industry.

Tariff Considerations

Copper oxides are entered under tariff item 208r, "oxide of tin or copper", Free, B.P. and 15 p.c., M.F.N. Black oxide of copper (cupric oxide) may also be entered under item 488 at rates of Free, B.P. and 10 p.c., M.F.N., when for use in the manufacture of chlorates and colours.

At the public hearing, Ferro Enamels Canada Limited and the Canadian Paint Varnish and Lacquer Association proposed that the existing rates be maintained.⁽¹⁾ The Canadian Federation of Agriculture listed cupric oxide as an additive used in agricultural feeds and urged that all feed additives should be entered free of duty under both the B.P. and M.F.N. Tariffs.⁽²⁾ No other representations were made to the Board respecting copper oxides or hydroxides. However, the Industry Committee, in a general proposal, recommended that all products for which no other representations were made should be dutiable at rates of 15 p.c., B.P. and 20 p.c., M.F.N.

None of the parties, Ferro Enamels, the C.P.V.L.A., the C.F.A. or the Industry Committee, indicated why the rates it proposed were particularly appropriate for the products to which they would apply.

Item 208r does not distinguish between copper oxides such as cuprite, a natural cuprous oxide, and chemically produced oxides. However, in the Brussels Tariff Nomenclature the synthetic oxides would be covered by heading 28.28 and cuprite by heading 26.01 "Metallic ores and concentrates and roasted iron pyrites."

For the most part, the proposals were made to the Board when products classified by B.T.N. heading 28.28 were being considered. No representations were made specifically concerning the naturally-occurring forms. The proposals by Ferro Enamels and the C.P.V.L.A. would leave the rates unchanged for both forms, while the general proposal of the Industry Committee would have the effect of increasing the rates on some of the chemically-produced oxides and on all of the naturally-occurring oxides which would be excluded from heading 28.28.

LITHIUM HYDROXIDE

Lithium hydroxide is the only lithium chemical of B.T.N. heading 28.28 that is of commercial importance in Canada. Its main applications are in the manufacture of greases which can withstand a very wide range of temperatures, as an alkaline battery electrolyte

⁽¹⁾ Transcript, Vol. 19, p. 2773, 2775; Vol. 93, p. 14157

⁽²⁾ Same, Vol. 78, p. 11925

additive and as an intermediate for the manufacture of lithium salts. In Canada its principal use is in the manufacture of lubricating greases. Both in its use in lubricants and as an electrolyte, the product has unique characteristics for particular applications.

Lithium hydroxide was not produced in Canada until 1963, when Quebec Lithium Corporation began to produce it near Val d'Or, Quebec. Foote Mineral Company estimated the Canadian market in 1961 at 70,000 to 100,000 pounds annually.⁽¹⁾ At the then laid-down cost in Canada, the value would be between \$50,000 and \$70,000. The use of lithium hydroxide has been growing rapidly. In 1962 and 1963 imports were valued at \$70,000 in each year. It is not known whether Quebec Lithium sold the product in Canada in 1963. The U.S.A. has been the principal source of supply, with some also imported from the U.K.

At the time of the hearing in January 1961, the duty-paid, delivered price in Canada was 72 cents a pound. At the beginning of 1961, the price in the U.S.A., delivered to U.S. consumers, was also 72 cents a pound, but has since declined and, in 1964, was 54 cents a pound.

Tariff Considerations

Lithium hydroxide is entered under tariff item 208t, at rates of Free, B.P. and 15 p.c., M.F.N. At the public hearing in January 1961, Foote Mineral Company, of Philadelphia, Pennsylvania, a producer in the U.S.A., and British American Oil Company Limited, which manufactures, at Clarkson, Ontario, greases using lithium hydroxide, proposed free entry under both the B.P. and M.F.N. Tariffs. B.A. Oil specified that these rates should apply only until the product was made in Canada. When it is made in Canada, the company recommended that rates of 15 p.c., B.P. and 20 p.c., M.F.N. apply.⁽²⁾

Pfizer Canada, whose parent company produces lithium chemicals in England, urged that the existing rates under item 208t, be maintained until lithium hydroxide is made in Canada.⁽³⁾ Pfizer did not specify what rates should apply when it is produced domestically.

Associated Lead Manufacturers of London, England, (A.L.M.) recommended that the existing rates under item 208t be made permanent and not be dependent on the product's "made-in-Canada" status.⁽⁴⁾

All of the manufacturers agreed with the user of the product, B.A. Oil, that lithium hydroxide is an expensive and essential ingredient of certain types of greases. All parties also agreed that Canadian consumers would benefit from lower rates of duty. The spokesman for A.L.M. made particular note of the fact that, in view of the high price of the product, a 15 per cent duty would add a substantial amount to the price.⁽⁵⁾

(1) Transcript, Vol. 19, p. 2783

(2) Same, Vol. 19, p. 2780, 2785

(3) Same, Vol. 19, p. 2786

(4) Same, Vol. 19, p. 2788

(5) Same, Vol. 19, p. 2795

Foote Mineral and B.A. Oil supported their proposals for free entry on the grounds of the benefits of lower costs to Canadian consumers. However, B.A. Oil did not indicate why rates of 15 p.c., B.P. and 20 p.c., M.F.N. would be necessary when the product was made in Canada.

Pfizer claimed that a British subsidiary of that company was the only producer in the Commonwealth of this essential material. The company appeared to base its request for maintenance of the existing preference on the strategic value of ensuring that one company in the Commonwealth produced lithium chemicals. However, the spokesman for A.L.M. indicated that his company produced lithium chemicals, including the hydroxide, in England and that at least one other, the Johnson, Mathie Company, also produced these products in the U.K.

The spokesman for A.L.M. said that a duty of 15 p.c., or 20 p.c. on a product as expensive as lithium hydroxide would give the manufacturer who produced it in Canada a very substantial advantage over foreign competitors. He said:

"An automatic increase in the B.P. rate to 15 p.c., B.P. ... upon commencement of manufacture in Canada would have the effect of placing any Canadian manufacturer in a monopoly position. We consider that it is of benefit to Canadian consuming industries to have some alternative source of supply."⁽¹⁾

The imposition of rates of 15 p.c., B.P. and 20 p.c., M.F.N. would, of course, narrow the British preferential margin from the existing 15 per cent ad valorem to 5 per cent ad valorem; imports from the U.S.A. would face an increase in duty from 15 p.c. to 20 p.c., but the rate on those from the U.K. would increase from zero to 15 p.c.

Those who proposed the automatic increase, when made in Canada, from free entry to 15 p.c., B.P. and 20 p.c., M.F.N., did not indicate why such rates might be required. A.L.M.'s spokesman referred to this question in the following terms:

"unless the Canadian manufacturer is an extremely high-cost and high-priced manufacturer the effect of the 15% B.P. must be to exclude them U.K. suppliers altogether."⁽²⁾

MOLYBDENUM OXIDES AND HYDROXIDES

Molybdenum trioxide is produced from naturally-occurring molybdenum disulphide and is itself the raw material for the production of ferromolybdenum (a steel alloy), calcium molybdate (a steel additive), sodium molybdate (a pigment) and other molybdenum compounds. Compounds of molybdenum are valued chiefly for their content of the metal and some are substitutable for each other in various applications. Molybdenum trioxide is the most important product of the group.

(1) Transcript, Vol. 19, p. 2789

(2) Same, Vol. 19, p. 2795

Because of the interrelationships both in economic and classification considerations, this section incorporates information on some molybdenum compounds which are classified under headings of the B.T.N. other than 28.28.

MOLYBDENUM TRIOXIDE

The Product and the Industry

Molybdenum trioxide (molybdic oxide), a white crystalline product which is used principally in the production of steel alloys, is obtained from molybdenite, the natural molybdenum disulphide. Molybdenite frequently occurs in nature in concentrations of only about 0.3 to 0.4 per cent and is concentrated to approximately 90 to 95 per cent molybdenum disulphide, for use or sale.

The two principal commercial forms are the trioxide and ferromolybdenum. The trioxide is sold as a relatively pure powder and as briquettes, which contain about 58 to 64 per cent molybdenum. Ferromolybdenum, an alloy of iron, is sold on the basis of its molybdenum content, which is about 67 per cent. "The form in which molybdenum is added to steel depends largely on the steel-making process, local conditions, and the amount of molybdenum to be added."⁽¹⁾ Other forms are used to impart different qualities to alloys but they are more expensive than the oxide or ferromolybdenum as sources of molybdenum.

Molybdenum is also available as ammonium molybdate, barium molybdate, calcium molybdate, sodium molybdate, molybdenum disulphide, molybdenum silicide and other compounds. The disulphide, in a purified form, is used mainly in the manufacture of lubricants; in its less pure form it is the molybdenite concentrate.

Until 1963, molybdenum products were produced in Canada by only one company, Molybdenite Corporation of Canada Limited. In 1963, Geomet Reactors Limited produced small amounts of ferromolybdenum at Ottawa, and Gaspé Copper Mines Limited began production of by-product molybdenite at Murdochville, Quebec. Several mining companies also were actively engaged in the development of molybdenite deposits or were preparing to recover by-product molybdenum.

The Department of Mines states:

"Molybdenite Corporation of Canada Limited was the sole Canadian producer of molybdenite in 1962. Its property is ... 23 miles north of Val d'Or, Quebec ... A roasting plant at the mine site converts molybdenite to technical-grade molybdic oxide (MoO_3), the material from which all types of molybdenum salts and compounds are produced."⁽²⁾

⁽¹⁾ V.B. Schneider, Molybdenum, Mineral Report 6, Canada Dept. of Mines and Technical Surveys, 1963, p. 58

⁽²⁾ Canadian Minerals Yearbook 1962, Molybdenum

The roasting plant came into continuous operation in December, 1950. Before this, almost all of the concentrates were exported and the Canadian demand for more highly processed products was supplied by imports. The company produces a molybdenite concentrate containing 90 per cent molybdenum disulphide, the technical grade of molybdic trioxide and a purified form of molybdenum disulphide for use in lubricants.⁽¹⁾ The trioxide is by far the most important of the three.

In the 1963 Yearbook it was reported that Gaspé Copper Mines Limited produced molybdenite concentrates in that year, most of which were sold to European buyers.

Annual shipments were around 400 tons of contained molybdenum, valued at about \$1 to \$1.3 million until 1963. This rate of output had been relatively stable since 1955, after the mine facilities of Molybdenite Corporation had been enlarged. In 1963 Gaspé Copper began production, and output in 1964 exceeded 600 tons (of contained molybdenum) and was valued at \$1.8 million.

Shipments of Molybdenite Concentrates and Molybdic Oxide,
Selected Years, 1952-64

	Gross Weight	Molybdenum Content	Total Value	Unit Value
	'000 lb.		\$'000	\$ per lb.
1952	662	304	410	1.35
1955	1,524	834	824	.99
1957	1,266	784	1,167	1.49
1958	1,488	888	1,153	1.30
1959	1,316	748	941	1.26
1960	1,298	768	1,015	1.32
1961	1,280	771	1,092	1.41
1962	..	818	1,261	1.54
1963	..	834	1,344	1.61
1964	..	1,278	1,789	1.40

Source: D.B.S., Smelting and Refining Industry, Cat. No. 41-214 and
Miscellaneous Metal Mining Industry, Cat. No. 26-219;
Canadian Minerals Yearbook

The current expansion of molybdenum production is expected to make Canada second only to the U.S.A. as a producer of the metal. Trade sources and other available information indicate that Canadian production, in terms of contained molybdenum, will approach 20 million pounds annually by 1967. At \$1.40 per pound, this would have a value of \$28 million and rank amongst the important mineral products of Canada.

(1) Transcript, Vol. 19, p. 2807

The Market

Molybdenum is used in Canada mainly in the form of molybdenum trioxide and ferromolybdenum; it is also used as molybdenum wire, molybdenum metal and in a variety of salts such as calcium and sodium molybdate. Excluding the metal and the wire, Canadian consumption in 1963 was about 1.25 million pounds of contained molybdenum with a value of approximately \$2 million. The oxide and the ferromolybdenum together accounted for more than 90 per cent of the total quantity and value.

The Department of Mines states:

"About 67 per cent of the molybdenum consumed is in the form of molybdic oxide, which is followed (in order of quantity) by ferromolybdenum and molybdenum-metal powder. Molybdenum is used in lesser amounts in calcium, sodium and ammonium molybdate, in molybdenum disulphide and in molybdenite concentrate added directly to steel,"(1)

The Dominion Bureau of Statistics reports:

"Molybdenum has a widening range of uses, but by far the greater part of the output is used in steel to intensify the effect of other alloying metals, particularly nickel, chromium, and vanadium. These steels usually contain from 0.15 to 0.4 per cent molybdenum, but in some instances the percentage is considerably higher. For high-speed tool steels as much as 9 per cent is added."(2)

Consumption of Molybdenum by Type of Product,
1960-63

<u>Product</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>
	'000 lb. molybdenum content			
Molybdic oxide	612	716	713	832
Ferromolybdenum	358	355	469	414
Calcium Molybdate	16	(b)	(b)	(b)
Sodium Molybdate	38	(b)	(b)	(b)
Metal and Wire	7	10	16	17
Other Forms	<u>11</u> (a)	<u>56</u>	<u>63</u>	<u>43</u>
Total of above	1,042	1,136	1,261	1,306

(a) Includes molybdic acid, molybdenum disulphide, ammonium molybdate and barium molybdate

(b) Included with "other forms"

Source: Canada Department of Mines and Technical Surveys, Canadian Minerals Yearbook

(1) Canadian Minerals Yearbook 1963

(2) D.B.S., Miscellaneous Metal Mining Industry, Cat. No. 26-219

The production of ferrous and non-ferrous alloys is the principal market outlet for the various forms of molybdenum, about 95 per cent of the total consumption. In 1961, iron and steel mills consumed 511 tons of contained molybdenum of which about 70 per cent was derived from molybdenum trioxide briquettes, 27 per cent from ferromolybdenum and only about three per cent was from other compounds, such as calcium molybdate. Part of the consumption of the other compounds was in specialty steels for which neither the trioxide nor the ferromolybdenum could be readily substituted. The molybdenum trioxide and, of course, molybdenite concentrate are produced in Canada. Until 1963 none of the other forms except molybdenum disulphide was available from Canadian production. In 1964, ferromolybdenum is expected to be manufactured in Canada in volume by Geomet Reactors Limited, from molybdenum trioxide produced by Molybdenite Corporation.

The only other significant uses of molybdenum are in lubricants and pigments. A purified molybdenum disulphide is used in the former, and sodium molybdate is the form required for pigments. Sodium molybdate is not produced in Canada.

Consumption of Molybdenum, by Use,
1960-63

<u>Product</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>
	<u>'000 lb. contained molybdenum</u>			
Ferrous & non ferrous alloys	1,004	1,069	1,186	1,256
Lubricants & pigments	21	54	64	43
Electrical & electronic products	4	6	7	7
Unspecified	<u>13</u>	<u>8</u>	<u>4</u>	<u>-</u>
Total of above	1,042	1,136	1,261	1,306

Source: Canadian Minerals Yearbook

Imports

Until 1950, when Molybdenite Corporation installed the necessary processing facilities, only molybdenite concentrates were produced in Canada. All other forms of molybdenum were imported. Since 1951, the company has been producing molybdenum trioxide for the manufacture of ferrous alloys and a purified grade of molybdenum disulphide for use in the manufacture of lubricants. No data are available regarding imports of purified molybdenum disulphide, but the small consumption of this product in Canada would suggest that imports are valued at only a few thousand dollars annually.

However, imports of molybdenum trioxide appear to be substantial both in volume and as a proportion of Canadian use. In the three years, 1961-63, between 20 and 30 per cent of the Canadian demand for the trioxide appears to have been supplied by imports. Canada imports molybdenum trioxide only from the U.S.A. Virtually all imports in the ten years, 1954 to 1963, were entered free of duty under end-use item 208g, for use in the manufacture of steel.

Imports of Molybdcic Oxide^(a) (Molybdenum Trioxide),
Selected Years, 1953-64

	Total Imports		Dutiable Imports	
	'000 lb.	\$'000	'000 lb.	\$'000
1953	358	375	-	-
1956	955	705	-	-
1959	306	242	3.6	4.8
1960	656	596	-	-
1961	266	212	-	-
1962	328	303	25.2	26.4
1963	259	246	24.2	23.7
1964	491	707	..	..

(a) All imports are from the U.S.A. and are in terms of gross weight, not molybdenum content

Source: D.B.S., Trade of Canada, Imports, s.c. 8380

Imports of ferromolybdenum are known to be entered from the U.S.A. and some were also said to be imported from Europe, including some from the U.K.⁽¹⁾ However, data are available only respecting imports from the U.S.A. Imports from the U.S.A. declined from about 138,000 pounds of contained molybdenum in 1960 to 76,000 pounds in 1963 and then increased sharply in 1964, to 163,000 pounds valued at \$422,000.

Exports

The spokesman for Molybdenite Corporation said his company exported all of the concentrate which it did not further process, and part of the production of molybdcic oxide.⁽²⁾ During the five years, 1955-59, the only ones for which data are available, molybdenite concentrates were exported to several European countries and also to Japan, Australia and the U.S.A. Exports to the U.S.A. occurred only in 1957. The major destinations of Canadian exports were the U.K., Italy, the Netherlands, Austria and Japan.

Exports of Molybdenite Concentrates and Molybdcic Oxide, by
Principal Country of Destination, 1955-59

	U.K.	Austria	Italy	Netherlands	Japan	Total	
			thousand pounds			'000 lb.	\$'000
1955	662	-	381	354	81	1,479	873
1956	601	-	436	-	280	1,318	941
1957	2	-	367	-	706	1,117 ^(a)	1,154 ^(a)
1958	469	505	114	164	-	1,892	1,620
1959	898	1,685	-	236	786	3,748	3,172

- not available after 1959-

(a) Excludes 4,892,600 lb. valued at \$3,870,185 which was produced from U.S. concentrates and re-exported to the U.S.A.

Source: D.B.S., Trade of Canada, Exports, s.c. 6573

(1) Transcript, Vol. 19, p. 2831

(2) Same, Vol. 19, p. 2831

Prices

Canadian prices of molybdenum materials are not published. However, in the U.S.A. prices are published regularly for all of the important molybdenum products. In the U.S.A., molybdenum trioxide, technical grade, is available for both chemical and metallurgical use. It is sold f.o.b. works on the basis of its molybdenum content, and ferromolybdenum is also sold on the same basis. Prices of the important commercial products are given below. As is apparent from the table, the cheapest source of molybdenum, apart from the concentrated ore, is the trioxide. The principal substitute in metallurgy for the oxide is ferromolybdenum, a more expensive material in terms of molybdenum content.

Prices of Molybdenum Products at End of Year,
f.o.b. Shipping Point, 1959-64

	<u>Moly. Powder</u> (a)	<u>Ore, 95% Mo S₂</u> (b)	<u>Moly. Trioxide</u> (c)	<u>Ferro- moly.</u> (d)	<u>Calcium Molybdate</u>
	\$U.S. per pound of contained molybdenum				
1959	3.35	1.25	1.46	1.82	1.50
1960	3.35	1.25	1.46	1.82	1.50
1961	3.35	1.40	1.59	1.95	1.63
1962	3.35	1.40	1.59	1.95	1.63
1963	3.35	1.40	1.59	1.95	1.63
1964 (e)	3.35	1.55	1.74	2.10	1.78

(a) Carbon-reduced

(b) Cost of containers extra

(c) Bags

(d) 58 - 64% molybdenum, powdered

(e) Preliminary

Source: E & MJ Metal and Mineral Markets, as reported in the Canadian Minerals Yearbook

An authoritative source states:

"Molybdenum may be added to steel for many specific reasons, such as to improve hardening qualities, resistance to shock, and greater high-temperature strength...

"Besides being added in such compounds as molybdc oxide [molybdenum trioxide], ferromolybdenum and calcium molybdate (now rare), additions of molybdenum may be made by almost complete recovery in scrap.

"The form in which molybdenum is added to cast and wrought steels depends largely on the steel-making process, on local conditions, and on the proportion of molybdenum to be added. Ferromolybdenum is adaptable to any of these processes; however, molybdc oxide is often used because it is cheaper. Additions of molybdenum in the furnace usually assure close control and uniformity of composition. In steel foundries, however, it is often desirable to add molybdenum to only a

portion of the heat ...; in these cases it is feasible to add up to 0.5 per cent molybdenum, in the form of ferromolybdenum in the ladle ...

"Molybdic oxide is widely used in the basic and acid open hearth processes, particularly for steels containing less than 1 per cent molybdenum. For additions above this proportion some operators prefer to use ferromolybdenum ...

"Ferromolybdenum is preferred for addition to all induction furnace steels and in the open hearth processes for steels containing more than 1 per cent molybdenum. Ferromolybdenum is also used in the open hearth processes when late additions of molybdenum are required to adjust the composition ..." (1)

Tariff Considerations

As the foregoing indicates, molybdenum trioxide is closely linked with ferromolybdenum, molybdenum disulphide, calcium molybdate, sodium molybdate and molybdic acid (anhydrous molybdic acid is molybdenum trioxide). Therefore, the discussion which follows deals with all of these except ferromolybdenum which is outside the scope of Reference 120, although its tariff status may have relevance in considering the relevant level for others.

Apart from end-use items, molybdenum trioxide is entered under tariff item 246 and molybdenum disulphide is entered under item 208t. Calcium molybdate and sodium molybdate are not made in Canada and are also entered under item 208t. In addition, molybdenum trioxide and calcium molybdate are entered under end-use item 208g, when for use in the manufacture of steel. The rates of duty applicable to these and some other related products are shown below.

<u>Product</u>		<u>B.T.N. Heading</u>	<u>Existing Tariff</u>		
			<u>Item</u>	<u>B.P.</u>	<u>M.F.N.</u>
Molybdenite ore & concentrates(a)	)	25.32	*329	Free	Free
	)	26.01			
Molybdenum trioxide		28.28	246	12½ p.c.	17½ p.c.
Molybdenum disulphide		28.35	208t	Free	15 p.c.
Calcium molybdate		28.47	208t	Free	15 p.c.
Sodium molybdate		28.47	208t	Free	15 p.c.
Molybdenum trioxide	)	for steel	208g	Free	Free
Calcium molybdate)				

* Not in Reference 120

(a) Impure molybdenum disulphide

(1) V.B. Schneider, Molybdenum, Mineral Report 6, Canada Department of Mines and Technical Surveys, 1963, p. 67-8

Almost all imports of molybdenum trioxide have been under item 208g, free of duty under all Tariffs.

At the public hearing, in January 1961, Molybdenite Corporation of Canada Limited proposed the elimination of item 208g as it relates to molybdenum trioxide and calcium molybdate. The effect of this would be that molybdenum trioxide would be entered only under item 246 at 12½ p.c., B.P. and 17½ p.c., M.F.N. The company urged rates of 15 p.c., B.P. and "the most favoured nation rate equivalent to the present American rate of 25 cents a lb. on the molybdenum content and 7½% ad valorem." (1) Such an M.F.N. rate would have been the equivalent of an ad valorem rate of about 23 to 25 p.c. These rates were recommended by the company for molybdenum trioxide, molybdenum disulphide and calcium molybdate.

The Canadian Pharmaceutical Manufacturers Association expressed an interest in molybdcic acid, indicating that its members used relatively small amounts of this product. It recommended that chemicals which were not made in Canada and were used in the production of pharmaceuticals be dutiable at rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided. The Association supported rates of 15 p.c., B.P. and 20 p.c., M.F.N. when they are made in Canada. (2) Molybdcic acid is not known to be made in Canada.

The Canadian Color Makers Association proposed free entry for sodium molybdate, under both the B.P. and M.F.N. Tariffs, in an end-use item, until the product is made in Canada; at that time, the rates would be 15 p.c., B.P. and 20 p.c., M.F.N. (3)

Neither the pharmaceutical manufacturers nor the colormakers indicated why their proposed rates were appropriate specifically for the products involved.

In a letter to the Board, dated December 7, 1960, Atlas Steel Limited stated:

"We are interested in the end-use tariff item 208g as it relates to molybdenum oxide for use in the manufacture of steel ...

"We have no objection to necessary tariff protection and ask only that it be considered relative to that which now applies to ferro-alloys, which are used in steel making for the same purpose as molybdenum oxide."

The principal relevant ferro-alloy would be ferromolybdenum, classified under item 375f with rates of Free, B.P. and 5 p.c., M.F.N. This item is outside the terms of Reference 120 - Chemicals.

The Canadian Rubber Association reported that its members used "molybdenum sulphide" as a friction modifier for brake linings. The Association made a general proposal for the creation of an item

(1) Transcript, Vol. 19, p. 2804

(2) Same, Vol. 87, p. 13321

(3) Same, Vol. 32, p. 4731-2; Vol. 93, p. 14205-6, 14210

similar in coverage to that of 208t but with free entry under both the B.P. and M.F.N. Tariffs, until the products were made in Canada. When they are made in Canada the rates under item 711 of 15 p.c., B.P. and 20 p.c., M.F.N. would be applicable.⁽¹⁾ In this, as in other submissions, the Association stressed that its members faced strong competition from abroad and that any increase in rates of duty on raw materials would affect costs and make the companies less able to withstand such competition. The concern about an increase in rates would apparently not apply to molybdenum disulphide because the producer's proposal was for retention of the existing rates.

The Canadian Federation of Agriculture included ammonium molybdate and sodium molybdate in a list of chemicals used in fertilizers and urged that:

"the present duty-free entry provisions of the tariff respecting fertilizers ... as provided under tariff items 662, 663(a), 663(b) and Drawback item 1046, be maintained in full effect."⁽²⁾

The Federation spokesman said fertilizers represented an increasingly important cost of farm production and urged retention of end-use items relating to materials used by agriculture as a part of Canadian policy.

The following tabulation shows the rates proposed for the various products and the existing rates for the item under which most imports of a particular product are entered.

<u>Product</u>	<u>B.T.N. Heading</u>	<u>Existing Rates</u>			<u>Proposed Rates</u>	
		<u>Item</u>	<u>B.P.</u>	<u>M.F.N.</u>	<u>B.P.</u>	<u>M.F.N.</u>
Molybdenum trioxide	28.28	208g	Free	Free	15 p.c. Free	23-25 p.c. 5 p.c.
Molybdic Acid	28.28	246	12½ p.c.	17½ p.c.	Free(a)	15 p.c.(a)
Molybdenum disulphide	28.35	208t	Free	15 p.c.	15 p.c.	23-25 p.c.
Ammonium molybdate	28.47	663b	Free	Free	Free	Free
Calcium molybdate	28.47	208g	Free	Free	15 p.c.	23-25 p.c.
Sodium molybdate	28.47	208t	Free	15 p.c.	Free(a)	Free(a)

(a) Until made in Canada; when made in Canada, 15 p.c., B.P. and 20 p.c., M.F.N.

The spokesman for Molybdenite Corporation said the main purpose of the company's proposals was to offset competition from the U.S.A. and that the proposed B.P. rate was directed against "possible develop-

(1) Transcript, Vol. 165, p. 24365

(2) Same, Vol. 83, p. 12814

ment elsewhere in the Commonwealth".⁽¹⁾ He said the Climax Mine in Colorado, the largest producer in the world, had a daily capacity many times as large as that of his company's mine. He urged that the Canadian producer be given approximately the same level of protection as was available to producers in the U.S.A.⁽²⁾ In 1963, compounds of molybdenum, including molybdenum trioxide and disulphide, were dutiable under the U.S. Tariff at 20 cents per pound of contained molybdenum, plus six p.c. ad valorem. At the 1963 price of \$1.59 per pound of contained molybdenum for the trioxide, the ad valorem equivalent of the U.S. Tariff would be about 19 per cent.

The spokesman referred to the importance of his company as a local employer and taxpayer in the area where the mine and plant were located and claimed that the competition of imports made it difficult to operate at a profit. He said, "Fortunately for us, our exports have kept us in operation. Had we relied only on our domestic sales we would have closed the mine."⁽³⁾

Molybdenite Corporation produces molybdenite concentrates for which, according to its spokesman, there appears to be no market in Canada. It also produces molybdenum trioxide, its principal product, and small quantities of molybdenum disulphide. Neither calcium molybdate nor sodium molybdate is produced in Canada. The pharmaceutical grade of molybdic acid also is not produced in Canada. Calcium molybdate was at one time competitive with the trioxide and with ferromolybdenum in the manufacture of steel alloys; in recent years it has become of minor importance and its principal use has been in special steels for which the other products are not readily substitutable.

Molybdenite Corporation's interest was concerned mainly with molybdenum trioxide and molybdenum disulphide and the competition of other molybdenum products with the trioxide. Molybdenum trioxide has only one major use, the production of steel alloys; molybdenum disulphide is used principally in lubricants and brake linings. Virtually all imports of molybdenum trioxide are entered free of duty under end-use item 208g and the company's proposal for elimination of this item would make the product subject to rates of 15 p.c., B.P. and 23 to 25 p.c., M.F.N. The disulphide is now entered under item 208t, at rates of Free, B.P. and 15 p.c., M.F.N. For this product the company proposed the same rates as for molybdenum trioxide. These rates were also proposed for calcium molybdate, apparently because the company considered this to be the most important of the competitive, molybdenum-containing products.

Canada currently consumes relatively large amounts of molybdenum trioxide. In 1963 consumption was 416 tons in terms of contained molybdenum, with an estimated value of around \$1.3 million. Consumption in 1963 was almost double that of 1959 and appears to be continuing to increase. The only other molybdenum product which supplies substantial quantities of molybdenum is the alloy, ferromolybdenum, which was not being produced in Canada up to 1963. The use of calcium molybdate has been declining for several years, according to the Canadian Minerals Yearbook, but even in 1960 supplied only 38 tons of contained molybdenum. The available information indicates that Canadian use of molybdenum disulphide is very much less than this.

(1) Transcript, Vol. 19, p. 2829

(2) Same, Vol. 19, p. 2804

(3) Same, Vol. 19, p. 2828

Thus the principal products, whose importation would provide significant competition for Canadian production, are molybdenum trioxide and ferromolybdenum. As noted earlier, the former is entered almost entirely for use in steel, free of duty under the B.P. and M.F.N. Tariffs; the latter is entered under item 375f at rates of Free, B.P. and 5 p.c., M.F.N. The two products are largely substitutable for each other in steelmaking, their principal application. In fact it appears that the principal competition is from imports of ferromolybdenum rather than from molybdenum trioxide. The available data indicate that imports of the trioxide now constitute between one quarter and one third of Canadian consumption, whereas previously they were between one half and three quarters of the total.

At the time of the hearing, Molybdenite Corporation was the only producer in Canada of molybdenum products. Since the hearing (in January 1961) the world demand for molybdenum products has increased at a very rapid rate and many companies have undertaken the development of Canadian molybdenum deposits and the recovery of by-product molybdenum. According to the available information, by 1967, ten companies will be producing molybdenum products in Canada with a total output of around 20 million pounds of contained molybdenum, 15 times as much as the record Canadian output in 1964.

Speaking of the increasing demand for molybdenum products, the Canadian Minerals Yearbook makes the following comments.

"World mine production for 1963 has been estimated ... at 90 million pounds; an all-time high ... Climax Molybdenum Company /of the U.S.A./ ... establishes world prices for most molybdenum products and during the year it maintained the prices established June 1, 1961, for molybdenum concentrates. However, an increase in world demand for molybdenum resulted in a shortage and many consumers in Europe and Japan are reported to have paid a premium of about 33¢ pound of molybdenum content for concentrates and oxides from sources other than Climax."

The 33 cent premium constituted 21 per cent of the price of molybdenum trioxide. The spokesman for Molybdenite Corporation informed the Board that a substantial part of his company's production was exported and the company would presumably have profited from the strong overseas demand.

The expansion of Canadian molybdenum production was well under way in 1965. As output increases these producers will have to look to export markets for most of their sales. Even if Canadian consumption continues to increase at its recent rate and domestic production displaces all imports, by 1967 Canadian demand is unlikely to exceed two million pounds of contained molybdenum annually. Thus, by 1967, Canadian companies would require foreign markets for about 18 million pounds, if their current commitments and plans are realized.

NICKELOUS OXIDE

Nickelous oxide is commercially the most important of the nickel oxides, hydroxides and peroxides. It is a greenish grey powder, whose density and shade varies with the method of preparation. In Canada, it was said to be used in conjunction with cobalt oxide in porcelain enamel frits.(1) It may also be used in the enamel industry in place of cobalt oxide, in the glass industry as grey colouring matter, and in organic synthesis as a catalyst.(2)

Ferro Enamels Canada Limited informed the Board that it used about 50,000 pounds of the product annually. Based on prices in the U.S.A., in 1961, this quantity of product would be valued at about \$40,000. Until 1960, when the Deloro Smelting and Refining Company Limited ceased producing it, Deloro was the source of supply. The spokesman for Ferro Enamels said his company expected to obtain the product from International Nickel of Canada Limited (Inco).

Nickel oxides are entered under item 246, at rates of 12½ p.c., B.P. and 17½ p.c., M.F.N. They may also be entered under end-use items 246b and 246c when for use in the manufacture of colouring constituents for glazes (246b), or for use in the manufacture of china and porcelain (246c). The rates under item 246b are Free, B.P. and 20 p.c., M.F.N.; under item 246c, they are Free, B.P. and Free, M.F.N.

At the public hearing, January 1961, the Ferro Enamels spokesman said:

"As the International Nickel Company have reported they are manufacturing nickel oxide in Canada, and it is our policy to use Canadian-made products whenever possible, we recommend that the rate for nickel oxide should be in accordance with the rate for the group, namely:

	<u>B.P.</u>	<u>M.F.N.</u> "(3)
28.28 <u>[B.T.N. heading]</u> Nickel Oxide	15%	20%

The spokesman gave no indication why these rates should be established.

The proposal involves an increase in the B.P. rate, under item 246, from 12½ p.c. to 15 p.c., and an increase in the M.F.N. rate from 17½ p.c. to 20 p.c. Imports by Ferro Enamels might be entitled to entry under tariff item 246b. The company's proposal would increase the B.P. rate for imports under this item from Free to 15 p.c., but would leave the M.F.N. rate unchanged.

Inco, by far the largest producer of nickel and nickel products in the world, made no representations to the Board regarding nickel oxides. No other representations were received from either producers or consumers.

Information available to the Board indicates that Inco produces very large quantities of nickel oxides, a substantial proportion of which is exported to the U.S.A. The consumption of the product by Ferro Enamels would constitute only a fraction of one per cent of Inco's production.

(1) Transcript, Vol. 19, p. 2834

(2) Explanatory Notes to the Brussels Nomenclature 1955, Vol. 1, p. 171

(3) Transcript, Vol. 19, p. 2834

ZIRCONIUM OXIDE

Zirconium oxide (zirconia) is a whitish powder used as a refractory product resistant to the action of chemical agents, a pigment and ceramic opacifier (zirconium white), an abrasive, a constituent of glass and a catalyst.(1) The Ferro Enamels Canada Limited spokesman said his company uses the product as a raw material in the production of pigments which are consumed mainly by the ceramics industry.(2)

He also said the product was not made in Canada and supplies were imported mainly from the U.S.A. The available information indicates that at least one company has manufactured zirconia in Canada, the Norton Company Limited at Chippawa, Ontario, but that this production was discontinued several years ago. Canadian Carborundum Company Limited produces zirconia at Niagara Falls, Ontario. This would not be of the pigment grade, according to available information.

Imports are all from the U.S.A. and have been increasing rapidly in recent years. Ferro Enamels' spokesman said zirconium oxide may also be imported in small amounts from other countries under various trade names. Almost all of the imports in 1963 were dutiable at five p.c., the M.F.N. rate under item 246a.

Imports of Zirconium Oxide, Selected Years, 1954-63

<u>Year</u>	<u>Dollars</u>
1954	9,970
1956	17,048
1958	22,557
1960	23,758
1961	32,540
1962	58,286
1963	60,921

Source: D.B.S., Trade of Canada, Imports, s.c. 7016

Zirconium oxide is entered under tariff item 246a, Free, B.P. and 5 p.c., M.F.N. At the public hearing, in January 1961, Ferro Enamels proposed that the product be free of duty under both the B.P. and M.F.N. Tariffs, until it is made in Canada. When made in Canada, the product would be dutiable at the heading rates proposed by the Industry Committee, namely 15 p.c., B.P. and 20 p.c., M.F.N.(3) The Ferro Enamels' spokesman did not indicate why these rates would be appropriate specifically for zirconium oxide when it is produced in Canada, nor why the M.F.N. rate should be decreased from the existing 5 p.c. to free entry while the product was not produced in Canada, although the company would presumably benefit from the lower rates.

(1) Explanatory Notes to the Brussels Nomenclature 1955, Vol. 1, p. 172

(2) Transcript, Vol. 19, p. 2835

(3) Same, Vol. 19, p. 2835

Item 246a has been in existence since 1929 and for at least part of this time there has been fairly substantial Canadian production of some form of the product. Neither of the two companies who are known to have produced it made any representations to the Board concerning zirconium oxide.

The Canadian Pharmaceutical Manufacturers Association listed zirconium dioxide (zirconium oxide) as a relatively unimportant product used by its members. The Association requested that chemicals which were not made in Canada and were used in the manufacture of pharmaceuticals should be dutiable at rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, and rates of 15 p.c., B.P. and 20 p.c., M.F.N., apply when the products are made in Canada.⁽¹⁾ The Association did not indicate why these rates would be appropriate specifically for zirconium oxide.

It should be noted that zirconium oxide occurs naturally as the mineral baddeleyite, which is classified under B.T.N. heading 26.01. Under the Canadian Customs Tariff the mineral concentrate is also admissible under tariff item 246a.

OTHER INTERESTS IN OXIDES OF B.T.N. 28.28

The discussion which follows deals with the following six products:

bismuth trioxide	calcium oxide
cadmium oxide	hydrazine hydrate
calcium hydroxide	mercuric oxide

Unlike the products which were dealt with in the foregoing, these were not the subject of formal presentations related to the chemicals involved. Instead, these products were brought to the Board's attention either in lists of chemicals which companies or trade associations submitted to the Board to indicate their interest in them, or were referred to at hearings dealing with end-use items under which the chemicals were imported.

All six of the products, of the purity relevant to heading 28.28 are of minor or negligible economic significance. No published data are available regarding bismuth trioxide and mercuric oxide. The value of imports of cadmium oxide varied greatly from year to year but did not exceed \$25,000 in any of the five years, 1957-61. No later data are available. Hydrazine hydrate appears to be more important, with imports in 1961 valued at \$70,000. None of these four chemicals is known to be made in Canada.

Two of the six, in less pure form, are important products. In its less pure form, calcium oxide is "lime" or "quicklime" and calcium hydroxide is "hydrated lime". Their importance in commerce is indicated on the following page.

⁽¹⁾ Transcript, Vol. 87, p. 13321

Production, Imports and Exports of Calcium Oxide and
Calcium Hydroxide, 1962-63

	1962		1963	
	'000 tons	\$'000	'000 tons	\$'000
Quicklime (calcium oxide)	1,181	14,148	1,205	14,915
Hydrated lime (calcium hydroxide)				
	<u>243</u>	<u>3,498</u>	<u>246</u>	<u>3,589</u>
Total	1,424	17,646	1,450	18,504
Imports	36	554	44	714
Exports	72	1,010	98	1,141

Source: Canadian Minerals Yearbook

In the B.T.N., only the forms produced by chemical processes are classified in heading 28.28; the mineral forms, produced by calcination, are classified under heading 25.22. In the Canadian Customs Tariff, the pure forms are under item 208t with rates of Free, B.P. and 15 p.c., M.F.N., and the impure forms are under an extract of item 711 with rates of 15 p.c., B.P. and 15 p.c., M.F.N. Item 711 was referred to the Board in so far as it relates to chemicals. If the rules of the B.T.N. were used to distinguish between chemicals and minerals, most, if not all, of the calcium oxide and calcium hydroxide shown in the preceding table would be defined as "mineral" and would be outside the terms of Reference 120. Most, if not all, of the quicklime produced in Canada, and most of the imports and exports, are of a product containing not less than 90 per cent calcium oxide.⁽¹⁾ It is produced by calcining (heating) limestone (calcium carbonate). If provision was made for the chemical forms of the oxide and hydroxide in an item worded like heading 28.28 of the B.T.N., the extract of item 711 would still be required to make provision for the mineral forms, possibly by the addition of "n.o.p." to the existing extract.

A similar classification problem arises with respect to cadmium oxide. A very pure, chemical form is entered under item 208t, as a chemical of a kind not made in Canada. However, there appear to be several other forms of cadmium oxide which are used as pigments either alone or in mixtures with other products. In the B.T.N., some of these would be classified with pigments and colours under such headings as 32.07 and 32.08; in the Canadian Customs Tariff, they would be entered mainly under items such as 246, 246b, and 246d. The value of imports of cadmium pigments, under the latter three items, is about \$250,000, annually. If an item worded like heading 28.28 of the B.T.N. were inserted in the Canadian Tariff, most of the pigment forms would be excluded and the item would pertain mainly to a very pure form of cadmium oxide, which is used for the manufacture of pharmaceuticals or other chemicals and is entered under item 208t, or free of duty under temporary end-use item 216e (when for use in the manufacture of stabilizers for vinyl resins).

⁽¹⁾ Canadian Minerals Yearbook, 1962, p. 326

The various expressions of interest in the six chemicals, are cited in the following:

The Canadian Pharmaceutical Manufacturers Association listed bismuth trioxide, calcium hydroxide, calcium oxide, hydrazine hydrate and mercuric oxide, as relatively unimportant products used by its members. It requested that chemicals which are not made in Canada and are used in the manufacture of pharmaceuticals should be dutiable at rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for. When they were made in Canada they would be subject to rates of 15 p.c., B.P. and 20 p.c., M.F.N.⁽¹⁾ The Association did not indicate why the proposed rates were appropriate specifically for these products.

Naugatuck Chemicals Division of Dominion Rubber Company Limited listed hydrazine hydrate as a raw material used by the company. Its spokesman said he did not object to the rates proposed by others, providing the Board "also recommends those rates which will be proposed to you for the products which we manufacture."⁽²⁾

Charles E. Frosst and Company also listed hydrazine hydrate as a raw material and proposed that end-use item 863 be left unchanged.⁽³⁾ The company imports the product under this item, free of duty under both the B.P. and M.F.N. Tariffs, for use in the manufacture of steroid derivatives.

Consolidated Mining and Smelting Company of Canada Limited (Cominco) and the Canadian Pulp and Paper Association indicated their interest in lime, calcium oxide. Their spokesmen expressed concern that increases in duties on raw materials would affect their costs and make them less able to compete successfully in both the domestic and export markets.⁽⁴⁾

Cominco and Polymer Corporation expressed an interest in hydrated lime, calcium hydroxide. Both companies reported the use of the product as a raw material. Cominco's position for hydrated lime was the same as for lime (see above). Polymer requested continuation of end-use item 851 under which the company imports materials for use in the manufacture of synthetic rubber, free of duty under all Tariffs.⁽⁵⁾

The Canadian Federation of Agriculture listed cadmium oxide as a feed additive and urged duty-free entry under both the B.P. and M.F.N. Tariffs, for chemicals used for animal nutrition purposes.⁽⁶⁾

Ferro Enamels Canada Limited listed cadmium oxide as a chemical which the company used in the manufacture of stabilizers for vinyl resins. The company recommended that chemicals not made in Canada should be entered free of duty under both the B.P. and M.F.N. Tariffs, and chemicals made in Canada, at 15 p.c., B.P. and 20 p.c., M.F.N.⁽⁷⁾ Its spokesman did not indicate why these rates should apply

(1) Transcript, Vol. 87, p. 13321

(2) Same, Vol. 6, p. 900

(3) Same, Vol. 78, p. 11952

(4) Same, Vol. 5, p. 715; Vol. 36, p. 5246

(5) Same, Vol. 89, p. 13587

(6) Same, Vol. 78, p. 11925

(7) Same, Vol. 165, p. 24409

to cadmium oxide when made in Canada. When imported for use in the manufacture of stabilizers for vinyl synthetic resins, the product is entered under item 216e, free of duty under both the B.P. and M.F.N. Tariffs. It is also entered under item 208t, Free, B.P. and 15 p.c., M.F.N., and under end-use item 246b, Free, B.P. and 20 p.c., M.F.N., when for use in the manufacture of vitreous enamels and pottery glazes.

The information available to the Board did not indicate the extent to which the various interests were concerned only with pure forms of the product, which would be classified under B.T.N. heading 28.28. However, it is probable that the pharmaceutical manufacturers and Ferro Enamels were referring to pure forms while some of the others were referring to the less pure, mineral forms.

The products which were the subject of the foregoing expressions of interest are shown below, together with their existing and proposed rates.

<u>Product</u>	<u>Item</u>	<u>Existing Tariff</u>		<u>Proposed Rates</u>	
		<u>B.P.</u>	<u>M.F.N.</u>	<u>B.P.</u>	<u>M.F.N.</u>
bismuth trioxide	208t	Free	15 p.c.	Free ^(a)	15 p.c. ^(a)
cadmium oxide	208t	Free	15 p.c.	Free ^(a)	15 p.c. ^(a)
	216e	Free	Free	Free	Free
	219h	Free	Free	Free	Free
	246	12½ p.c.	17½ p.c.	-	-
	246b	Free	20 p.c.	-	-
	246d	Free	Free	-	-
	921	Free	Free	-	-
	) 208t	Free	15 p.c.	Free ^(a)	15 p.c. ^(a)
calcium hydroxide	) 711 Ex.	15 p.c.	15 p.c.	15 p.c.	15 p.c.
	) 851	Free	Free	Free	Free
calcium oxide	same as for calcium hydroxide				
hydrazine hydrate	208t	Free	15 p.c.	Free ^(a)	15 p.c. ^(a)
	863	Free	Free	Free	Free
mercuric oxide	208t	Free	15 p.c.	Free	15 p.c.

(a) Until made in Canada; when made in Canada, rates would be 15 p.c., B.P. and 20 p.c., M.F.N.

Lime and hydrated lime, the impure forms of calcium oxide and calcium hydroxide, are outside the terms of Reference 120 - Chemicals, except when entered under some end-use item such as 851. The Canadian market for the pure forms appears to be small. Of the remaining four products, namely bismuth trioxide, cadmium oxide, hydrazine hydrate and mercuric oxide, only cadmium oxide and hydrazine hydrate are known to have much economic significance.

OTHER PRODUCTS OF B.T.N. HEADING 28.28

The other oxides, hydroxides and peroxides classified under B.T.N. heading 28.28 include a very large number of chemicals, a number of which are listed in the introduction to this heading. Most of these appear to have little economic importance. However, imports of some of them are valued at several thousand dollars annually. Others, which are not listed separately in the trade statistics, may be included within the terms of Reference 120, whether or not classified in the chemical section of the B.T.N. Statistics on imports of "Oxides, n.o.p." were tabulated in statistical classes 8172, 8187, 8190 and 8199 in 1963, in which year imports of this group of products were valued at \$572,000.

In accordance with its practice, the Industry Committee proposed that those products, not the subject of other proposals, be dutiable at 15 p.c., B.P. and 20 p.c., M.F.N., in an item worded like heading 28.28 of the B.T.N.

Most of the products which would be subject to this proposal are not made in Canada and many are classified under tariff item 208t, at rates of Free, B.P. and 15 p.c., M.F.N. Thus for a large number of products, the Industry Committee's proposal involves a substantial increase in rates and a considerable reduction of the British preferential margin. The Committee did not indicate why these rates would be appropriate specifically for the products of heading 28.28 to which they were intended to apply.

FLUORIDES, FLUROSILICATES, FLUOROBORATES AND OTHER
COMPLEX FLUORINE SALTS - B.T.N. 28.29

INTRODUCTION

Heading 28.29 of the Brussels Tariff Nomenclature includes a large number of products, only a few of which are of substantial economic importance. The economically important products are: aluminum fluoride, sodium fluoroaluminate (sodium aluminum fluoride), sodium fluoride and sodium fluorosilicate. Of the remainder, there is not one whose sales in Canada would approach \$50,000 annually according to the available information, and sales of most would be considerably less than \$20,000 annually. With the exception of the four products named above, the total estimated annual market value of all the products combined is less than \$200,000.

Aluminum fluoride and sodium fluoroaluminate, whose economic importance overshadows by a wide margin all of the other products combined, are used in the production of aluminum metal and are of great importance to the Aluminum Company of Canada Limited (Alcan).

Sodium fluoroaluminate (synthetic cryolite) is entered duty-free under tariff item 334, which is outside the terms of Reference 120. This product was brought to the Board's attention only for the purpose of maintaining the completeness of the relevant B.T.N. classification for chemicals.⁽¹⁾ Both the Industry Committee and Alcan proposed that the product be relocated as part of an item like B.T.N. heading 28.29, without change in the existing rates.⁽²⁾

ALUMINUM FLUORIDE

Aluminum fluoride is used in the production of aluminum metal and as a flux by the secondary aluminum smelting industry. The Aluminum Company of Canada Limited informed the Board that it produced sufficient both for its own use and for other Canadian consumers. Most of the production is used by Alcan.

There are no published data relating to aluminum fluoride but Canadian consumption of the product is known to be valued in millions of dollars. Most of the production is captive and the market is small relative to domestic production. There have been no known imports of aluminum fluoride in recent years.

Aluminum fluoride is entered under tariff item 208t at rates of Free, B.P. and 15 p.c., M.F.N.

The spokesman for Alcan said, "We have no quarrel with the present rates of duty and we, therefore, support the proposal...that aluminum fluoride appear under Item 28.29...at rates of 0% B.P. and 15% M.F.N."⁽³⁾

⁽¹⁾ Transcript, Vol. 20, p. 2840

⁽²⁾ Same, Vol. 20, p. 2840, 2842

⁽³⁾ Same, Vol. 20, p. 2841

The company did not indicate why the protection of the 15 p.c., M.F.N. Tariff was required, nor how this would assist the company in its operations.

COPPER FLUOROBORATE, LEAD FLUOROBORATE, POTASSIUM FLUOROBORATE,
POTASSIUM TITANIUM FLUORIDE, SODIUM FLUOROBORATE AND
STANNOUS FLUOROBORATE

At the hearing on January 23, 1961, Allied Chemical Canada Limited and its wholly-owned affiliate, Nichols Chemical Company Limited, made a submission to the Board with respect to the six products listed above. All six have been produced by Nichols at its plant at Valleyfield, Quebec, since 1959.

At its Valleyfield plant, Nichols manufactures a variety of chemicals, the principal ones being sulphuric acid, aluminum sulphate and hydrofluoric acid. The plant also produces a variety of chemicals based on hydrofluoric acid, but these are of minor economic importance relative to the former three chemicals. The products of heading 28.29 were said to be produced by a batch process. The company claimed to be able to supply all Canadian requirements of the chemicals. Nichols is the only producer of these products in Canada.

All of the products are used either in metal plating or other metallurgical processes. Potassium titanium fluoride is also used in the manufacture of latex rubber. The spokesman for Allied Chemical said that other chemicals could be substituted for the products manufactured by Nichols. However, the discussion indicated that there would be advantages in using the fluorine chemicals in particular applications.

The market for these products in Canada is small and is concentrated largely in Ontario and Quebec, particularly in Toronto and Montreal.⁽¹⁾ The company spokesman said that Nichols supplied almost the whole market.

Fluorine chemicals were said to be produced in five plants in the U.S.A. located at Marcus Hook and Boyertown, Pennsylvania, and at Cleveland, Ohio. These plants also produced by a batch process but had larger outputs of fluorine products than Nichols.

In Canada, Nichols prices its fluoroborates and fluorides f.o.b. Montreal and Toronto; in the U.S.A. these products are sold f.o.b. plant. Three of the six products, copper, lead and stannous fluoroborate, are sold in either glass or polyethylene carboys containing five gallons and four gallons respectively. Potassium fluoroborate and sodium fluoroborate and potassium titanium fluoride are sold in 400 pound drums. The glass carboys are returnable at the buyer's expense; the polyethylene carboys are non-returnable.

In January 1961, the following were submitted as being the then current prices in Canada and the U.S.A. It should be noted that Canadian prices are, in effect, the delivered prices to buyers because

⁽¹⁾ Transcript, Vol. 20, p. 2855

of the concentration of the market around Toronto and Montreal, and therefore are not directly comparable with the U.S.A. prices. For those products for which prices are published, prices current in mid-1964 are given in brackets.

	f.o.b. Toronto and Montreal \$Can.	f.o.b. plant in the U.S.A. \$U.S.
	per 100 pounds	
<u>Copper fluoroborate</u>		
80 lb. (5 gal.) glass carboy	43.50 (42.50)	33.00
60 lb. (4 gal.) poly. carboy	45.50	35.00
<u>Lead fluoroborate</u>		
95 lb. (5 gal.) glass carboy	28.50 (32.00)	20.50
70 lb. (4 gal.) poly. carboy	30.00	22.50
<u>Stannous fluoroborate</u>		
80 lb. (5 gal.) glass carboy	106.00 (115.00)	86.00
60 lb. (4 gal.) poly. carboy	108.00	88.00
<u>Potassium fluoroborate</u>		
400 lb. drum	35.85 (40.00)	30.00 (30.00)
<u>Sodium fluoroborate</u>		
400 lb. drum	35.85	30.00
<u>Potassium titanium fluoride</u>		
400 lb. drum	43.00	39.00 (39.00)

Source: Transcript, Vol. 20, p. 2851

The spokesman for the company said that Nichols did not export any of its fluoroborates.

Import statistics relating to the individual products are not published. However, information available to the Board suggests that the generally small imports of these products halted after Nichols came into operation.

Tariff Considerations

Copper, lead, potassium, sodium and stannous fluoroborate and potassium titanium fluoride are all entered under item 711 at rates of 15 p.c., B.P. and 20 p.c., M.F.N. At the public hearing in January 1961, Allied Chemical Canada Limited proposed that there should be no change in the existing rates in a tariff item worded like heading 28.29 of the Brussels Tariff Nomenclature.⁽¹⁾ No other representations were made to the Board with respect to any of the six products.

Allied cited higher Canadian costs and the potential competition of United States and British producers as the principal reasons for maintaining the existing rates.

The company spokesman said the smaller size of the Canadian market limited the economies of scale. He also said that unit costs

⁽¹⁾ Transcript, Vol. 20, p. 2853

were higher in Canada because raw materials cost more and the "wide geographic distribution of the Canadian market adds to the expenses of marketing and transportation."(1)

In connection with foreign competition, he said:

"Plants in the United States, located close to the Canadian border, would be the major competitive factor...Competition in alkali fluoborates and potassium titanium fluoborate could also develop from other countries, particularly the United Kingdom."(2)

He amplified this, saying:

"The close location of large-scale foreign production, however, renders Canadian manufacture of those products particularly vulnerable to import competition, principally because of the productive costs factor."(3)

The available information does not permit an analysis of relative costs of production in Canada and the U.S.A. However, there appear to be factors which would tend to modify the extent of the disabilities under which Nichols claimed to operate. For example, Nichols produces its own hydrofluoric acid and would import boric acid, which is not produced in Canada, free of duty, under item 208. Some of the company's other raw materials such as lead oxide and titanium dioxide are available in Canada at prices comparable with or lower than those in the U.S.A.

According to the evidence, the batch process also does not appear to introduce serious cost disabilities, as indicated by the following exchange:

Q. "So that although the batch process may, indeed, produce additional expense it does also the same thing for your competitor?"

A. "Yes.

Q. "It may be a difficulty, but it is not a relative difficulty in this sense?"

A. "Yes."(4)

Although the Allied spokesman referred to "Plants in the United States, located close to the Canadian border," these plants are in fact at a considerable distance from the principal market areas of Toronto and Montreal, particularly the latter city. Valleyfield is only some 25 miles from Montreal and about 325 miles from Toronto. Cleveland, the nearest producing location in the U.S.A., is approximately 300 miles from Toronto and 600 miles from Montreal. Thus,

(1) Transcript, Vol. 20, p. 2852

(2) Same, Vol. 20, p. 2852

(3) Same, Vol. 20, p. 2853

(4) Same, Vol. 20, p. 2863

Nichols would appear to have a considerable freight advantage in the Montreal area, and to be roughly an equal distance from Toronto as is Cleveland. The Pennsylvania plants are in the southeastern part of the state and considerably further away than Nichols from both Toronto and Montreal.

Nichols may also have advantages because it is in a better position than producers in the U.S.A. to be consulted on technical problems related to the use of its products. Its ability to deliver small quantities on relatively short notice may also assist the company in selling these chemicals. The total volume of sales in Canada of the individual products suggests that many sales are in less than truckload lots.

In January 1961, the Nichols price of potassium titanium fluoride was only 11 per cent higher than the price in the U.S.A. However, its prices were 20 per cent higher for potassium and sodium fluoroborate, 24 per cent higher for stannous fluoroborate, 33 per cent higher for cupric fluoroborate and 40 per cent higher for lead fluoroborate. The fact that Nichols has been supplying almost the entire Canadian demand for these products would suggest that the company had advantages which offset their higher costs of operation.

SODIUM FLUORIDE

Sodium fluoride was said not to be made in Canada. It is imported almost entirely from the U.K. and the U.S.A.⁽¹⁾ Its principal use is as a preservative of timber, but there is a growing use of the product in the fluoridation of water supplies. Sodium fluoride is also used in other applications such as metal flux preparations, insecticides and the production of aluminum.

The Canadian market has been growing rapidly in recent years. In 1959, 281 tons valued at approximately \$67,000 were imported; in 1963, five years later, imports were 447 tons valued at \$111,000.

Until 1962, the U.K. was the principal supplier of the Canadian market and accounted for almost 90 per cent of all imports in the years immediately preceding 1962. The only other supplying country of any consequence was the U.S.A. In 1962 and 1963, imports from the U.S.A. increased sharply from 51 tons in 1961 to 222 tons in 1963. In 1963, the U.K. and the U.S.A. exported about the same quantities of sodium fluoride to Canada.

Sodium fluoride is entered under tariff item 208t at rates of Free, B.P. and 15 p.c., M.F.N. It may also be entered under end-use items such as 791 which relates to chemicals used for such purposes as disinfecting, spraying and fumigating.

(1) Between 1951 and 1955, sodium fluoride was ruled "made in Canada." However, since 1955, it has not been available commercially and the product has been considered not made in Canada although it may be captively produced.

Imports of Fluoride of Soda, by Country of Origin,
1957-63

	U.K.		U.S.A.		Total	
	tons	\$'000	tons	\$'000	tons	\$'000
1957	300	69.0	20	9.2	320	78.3
1958	181	41.8	14	8.0	205	51.6
1959	261	55.3	18	10.8	281	66.6
1960	272	60.7	21	9.1	314	74.1
1961	319	70.4	51	15.9	389	90.2
1962	199	47.5	135	38.2	345	88.2
1963	222	52.8	222	57.5	447	111.3

Source: Trade of Canada, Imports, s.c. 8369

At the public hearing in January 1961, James Wilkinson and Son Limited of Sheffield, England was represented by its Canadian agents, Minerals and Chemicals Limited of Montreal. It proposed:

"that it would be in the general interests of...Canadian consumers if those fluorine products not made in Canada should continue to be admitted at the present rates..."

The spokesman said:

"Whilst the quantities involved for each individual product are relatively small, they represent in many cases important raw materials for Canadian industry and, consequently, any increase in import duties would have an adverse effect on the competitive position of those Canadian industries using such products."⁽¹⁾

The Canadian Pharmaceutical Manufacturers Association recommended that chemicals used in the manufacture of pharmaceuticals be entered Free, B.P. and at 15 p.c., M.F.N., unless otherwise provided for, when ruled not made in Canada. The Association listed sodium fluoride as one of the less important chemicals used by its members.⁽²⁾

The Canadian Federation of Agriculture listed sodium fluoride as a feed additive. In general submissions, the Federation indicated that it was strongly opposed to any change in the end-use items which were related to products used by farmers.⁽³⁾ For this use, sodium fluoride may be entered duty-free under tariff item 219h; the item is not part of Reference 120.

(1) Transcript, Vol. 20, p. 2873

(2) Same, Vol. 87, p. 13278

(3) Same, Vol. 5, p. 730 and following; Vol. 86, p. 13032

OTHER PRODUCTS OF HEADING 28.29

Although the submission by James Wilkinson and Son was concerned mainly with sodium fluoride, the Company also submitted a list of other products in which it had an interest. Its spokesman indicated that only four or six chemicals in the group were actually exported to Canada and named the following products in its submission.⁽¹⁾

ammonium bifluoride	lead silicofluoride
ammonium borofluoride	lithium fluoride
barium fluoride	magnesium fluoride
barium silicofluoride	magnesium silicofluoride
boron trifluoride complexes	manganous fluoride
cadmium fluoroborate solution	nickel fluoroborate solution
chromium fluoride	nickelous fluoride
cobaltous fluoride	potassium fluoride
ferrous fluoroborate solution	potassium bifluoride
lead fluoride	potassium cryolite
potassium zirconium fluoride	zinc fluoride
sodium bifluoride	zinc fluoroborate solution
sodium titanium fluoride	zinc silicofluoride
stannous fluoride	

It should be noted that the company used the designation of "silicofluoride" whereas the B.T.N. uses the term "fluorosilicate". It should also be noted that boron trifluoride is classified in the B.T.N. under heading 28.14 ("halides, oxyhalides and other halogen compounds of non-metals"); boron trifluoride complexes are classified under heading 29.45.

The company spokesman said the products listed would be entered at Free, B.P. and 15 p.c., M.F.N. if imported into Canada, presumably under item 208t. He proposed retention of these rates for the products listed, for the reasons outlined in the discussion of sodium fluoride.

The Consolidated Mining and Smelting Company of Canada Limited indicated its interest in potassium fluorosilicate and sodium fluorosilicate. The company's submission included these in a list of products, some of which were produced by the company but were not sold.

(1) Transcript, Vol. 20, p. 2873-4

The company's general position was that no rates of duty which might affect the costs of Canadian manufacturers should be increased.⁽¹⁾ Both products would be entered under item 208t, Free, B.P. and 15 p.c., M.F.N.

In a letter to the Board dated June 27, 1963, Ferro Enamels (Canada), Limited proposed that potassium and sodium fluorosilicate, which it uses as raw materials in the manufacture of porcelain enamel frits, be free of duty under both the B.P. and M.F.N. Tariffs. The letter said, "If imported at rates of 15 - 20%...the effect on our enamel costs would be quite serious."

The Association of British Chemical Manufacturers wrote to the Board on September 2, 1963 as follows:

"the Association would like to make representations to the Board that the existing rates for sodium fluorosilicate should be maintained. Several of our members make and export sodium fluorosilicate and one has a substantial interest in the Canadian market...the existing rates giving a preference to U.K. suppliers are of value to them and since there are in return substantial preferences extended by U.K. to the products of Canadian manufacturers, we think it reasonable to ask that the existing rates of 0% B.P./15% M.F.N. be retained, until at least as such time as Canadian production of sodium fluorosilicate is substantial in relation to the Canadian demand."

The letter did not indicate what rates would be appropriate when the product was produced in Canada in such a volume.

The Rubber Association of Canada informed the Board of its interest in sodium silicofluoride (fluorosilicate) which its members used as a latex gelling agent. The Association recommended that chemicals not made in Canada be entered free of duty under both the B.P. and M.F.N. Tariffs.⁽²⁾

The Canadian Federation of Agriculture expressed an interest in ammonium silicofluoride (fluorosilicate), sodium aluminum fluorosilicate, sodium fluorosilicate and zinc silicofluoride (fluorosilicate) as chemicals used in the manufacture of pesticides. The Federation urged that, when imported for this purpose, chemicals be entered free of duty under all Tariffs.⁽³⁾

The Industry Committee recommended that all products which had not been the subject of rate proposals by others should be dutiable at rates of 15 p.c., B.P. and 20 p.c., M.F.N.⁽⁴⁾

(1) Transcript, Vol. 5, p. 715

(2) Same, Vol. 165, p. 24368

(3) Same, Vol. 110, p. 16631

(4) Same, Vol. 20, p. 2840

The spokesman for the Committee objected to the proposal of Wilkinson and Son on the grounds that the rates of Free, B.P. and 15 p.c., M.F.N. which were recommended by the company would apply to several products of small economic significance. The Wilkinson spokesman indicated that he considered the margin of British preference important to preserve and said:

"we and our principals feel that if fluorine compounds enter the U.K. duty free this should also be granted to imports from the U.K. to Canada."⁽¹⁾

(1) Transcript, Vol. 20, p. 2887

CHLORIDES AND OXYCHLORIDES - B.T.N. 28.30INTRODUCTION

In January 1961, when the chlorides classified in B.T.N. heading 28.30 were being considered, about two dozen products came before the Board. In total, these have a commercial value of about seven million dollars, but three or four of the products predominate in this commerce. Excluded, however, is potassium chloride (potash), with its large use in fertilizers; it is classified by heading 31.04. Calcium chloride is commercially by far the most important of the products under heading 28.30. Sales of aluminum chloride, ammonium chloride and zinc chloride also are larger than those of most other products under the heading. These four products are made in Canada. Titanium tetrachloride, barium chloride, nickel chloride and ferric chloride were among the products for which no Canadian production was recorded, but which were imported in significant amounts.

The four principal products that are made in Canada, combined, have an estimated market value in excess of \$6 million a year, and represent more than 90 per cent of the value of all chlorides under this heading. For these, the overall effect of the proposals would be to increase the rates of duty substantially. Apart from possible free entry under end-use items, the existing and proposed rates of duty for this group of products are given below.

<u>Product</u>	<u>Est. Annual Market Value</u> \$'000	<u>Existing Rates</u>			<u>Proposed Rates</u>	
		<u>Item</u>	<u>B.P.</u>	<u>M.F.N.</u>	<u>B.P.</u>	<u>M.F.N.</u>
Aluminum chloride	600	211a	Free	10 p.c.	15 p.c.	20 p.c.
Ammonium chloride	300	208j	Free	25 p.c. (a)	15 p.c.	20 p.c.
Calcium chloride	5,000	208a	Free	8 p.c.	15 p.c.	20 p.c.
Zinc chloride	150	208s	Free	20 p.c.	15 p.c.	20 p.c.

(a) Approximate ad valorem equivalent of the specific duty of 15 cents per 100 pounds

Apart from the proposals noted for these four products, the representations generally were for continuation of existing rates of duty. For the chlorides not made in Canada the existing rates are Free, B.P., 15 p.c., M.F.N., under tariff item 208t; for the chlorides deemed to be made in Canada, the proposed rates were 15 p.c., B.P., 20 p.c., M.F.N., the existing rates under tariff item 711. These proposals, therefore, would bring about little or no change in rates of duty for many products whose combined annual market value, however, is estimated to be only about \$400,000.

CALCIUM CHLORIDE

The Product and the Industry

Calcium chloride is a white solid or a colourless solution. It is hygroscopic, deliquescent and exothermic on hydration, and it occurs in various combinations with water. It is available commercially as a solution and in solid or flake form.

In Canada, calcium chloride is produced by the Solvay, or ammonia-soda, process in which calcium chloride is a co-product of sodium carbonate. The two chemicals are produced in a fixed ratio to each other. The Solvay process is also used extensively in the United States, but, in addition, U.S. producers recover calcium chloride from natural brine deposits.

At the time of the public hearing, in January 1961, anhydrous calcium chloride was made in Canada only by Brunner Mond Canada Limited, at Amherstburg, Ontario. The plant was erected in 1917-1918 by Brunner Mond and Company, of England, and the Solvay Process Company of the United States. In 1923 the ownership and operation of the company was assumed by Allied Chemical and Dye Corporation of the U.S.A. which also owns Allied Chemical Canada Limited and other companies in Canada. The plant, established originally to produce soda ash, began to recover calcium chloride from the waste effluent in 1935. In 1960, the plant employed about 640 people and had an annual payroll of about \$3 million.⁽¹⁾

At the hearing of May 14, 1962 it was said that Dow Chemical of Canada Limited at Sarnia, Ontario had begun to produce calcium chloride solution for sale, principally for use on roads.⁽²⁾ These sales were estimated to account for about ten per cent of the market. In 1962, Western Chemicals Limited began production of the anhydrous form at Two Hills, Alberta, using limestone and hydrochloric acid.

The Brunner Mond representative said that the company's Amherstburg plant produces more than enough calcium chloride effluent to satisfy all Canadian requirements of calcium chloride, but that only part of the effluent was being processed to recover anhydrous calcium chloride. He indicated that, in 1962, the plant's current capacity to recover calcium chloride was being fully used.⁽³⁾ The capital investment required to install equipment to purify and dry the effluent was said to be large.

The Market

From statements made at the hearing it would appear that in 1960 the Canadian market took some 150,000 tons of calcium chloride, the value of which, at then current prices, would be approximately \$5 million. Imports in 1960 were about 15 per cent of the estimated

(1) Transcript, Vol. 21, p. 3007

(2) Same, Vol. 80, p. 12172; Vol. 21, p. 3039

(3) Same, Vol. 21, p. 3013

Canadian consumption. Calcium chloride is sold from coast to coast; consumption by areas is roughly proportional to population, with about two-thirds of all sales, therefore, in Ontario and Quebec.

Distribution of Estimated Canadian Consumption
of Calcium Chloride, by Use, 1960

<u>Use</u>	<u>Per Cent of Total</u>
Roads	75.0
Concrete	10.0
Private ice control	5.0
Private dust control	3.0
Tractor tires	3.0
Refrigeration	2.5
Air drying & miscellaneous	<u>1.5</u>
Total	100.0

Source: Transcript, Vol. 21, p. 3012

For road use, calcium chloride is purchased mainly by municipal and other government departments and agencies. It is used to stabilize roadbeds, to control dust on unpaved roads and to melt ice and snow on roads and highways. The largest demand for road use occurs in the summer and storing the product to meet this seasonal peak was cited as one of the cost factors which placed the company at a disadvantage relative to producers in the U.S.A. About 60 per cent of the yearly shipments were said to take place in the four summer months. (1)

Foreign Trade

Imports, mostly from the U.S.A., reached a low of 8,300 tons in 1954, but rose gradually thereafter to a peak of about 45,000 tons in 1957, the year in which Brunner Mond expanded its plant. Imports then declined until 1961, although they continued to be much higher than in the early 1950's. In the three years, 1962-64, imports were between 31,000 and 40,000 tons annually, some 20 per cent of estimated Canadian consumption. At the hearing in May, 1962, the Brunner Mond spokesman was asked,

"Who are the importers of this material [calcium chloride]? ... Are they companies who import for sale without manufacturing themselves, or are they your own company and, say, Dow, who import to supplement their own manufacture?"

He replied, "I would suggest the latter is closer to the case." (2)

Exports appear to be generally negligible. The spokesman for the company indicated that the location of competitors in the U.S.A. relative to consuming centres makes exports to that country uneconomic.

(1) Transcript, Vol. 21, p. 3012-3

(2) Same, Vol. 80, p. 12178

Imports of Calcium Chloride,
1958-1964

<u>Year</u>	<u>Tons</u>	<u>\$</u>
1958	34,171	1,023,219
1959	36,044	1,037,294
1960	23,169	700,257
1961	17,954	592,356
1962	39,841	1,315,133
1963	31,154	1,100,259
1964	32,530	1,171,033

Source: D.B.S., Trade of Canada, Imports, s.c. 8315

Pricing Policy and Transportation

Calcium chloride is priced f.o.b. the plant at Amherstburg, Ontario. Freight allowances are granted to purchasers in order for Brunner Mond to compete against imports into the Prairies and the Atlantic Provinces. The effect of the allowances is similar to freight equalization, but the allowances were said to give greater flexibility in meeting various competitive situations. In the United States the price is quoted f.o.b. plant, freight equalized.

The Canadian manufacturer sells the solid (73 to 75 per cent calcium chloride) in 350-pound steel drums, and the flake (77 to 80 per cent calcium chloride) in 25-pound and 100-pound paper bags. The price of the flake is ordinarily higher than that of the solid. In the United States, calcium chloride is also available as a concentrated flake (94 to 97 per cent calcium chloride), a powder, and in a U.S.P. grade which is much higher in price than the other grades. The usual liquid form is a 40 per cent solution in water; the large content of water makes this form expensive to transport.

Prices of Calcium Chloride in Canada and the U.S.A.,
(Flake, in bags, 77-80 per cent, Carload lots, at works)
1959-65

<u>Year</u>	<u>Canada</u>	<u>U.S.A.</u>	
		<u>High</u>	<u>Low</u>
	\$Can. - per ton -	\$U.S.	
1959	34.00	31.00	31.00
1960	34.00	32.00	31.00
1961	34.00	32.00	32.00
1962	35.00	34.00	32.00
1963	37.00	34.00	34.00
1964	37.00	35.00	34.00
1965	37.00	35.00	34.00

Source: Canadian Chemical Processing and Oil Paint and Drug Reporter

Competitive plants in the United States are located at Midland and Ludington, Michigan; Barberton, Ohio; and Syracuse, New York. The plant at Syracuse is owned by Allied Chemical Corporation, the parent company of Brunner Mond Canada, Limited. At the public hearing it was said that Dow Chemical at Midland, Michigan, provides most of the competition west of Ontario.⁽¹⁾ In 1962, Western Chemical Limited began production at its plant in Alberta with a view to supplying the Prairie market. In the provinces east of Manitoba, the principal competition is probably from Brunner Mond's parent company's plant at Syracuse, New York. The Atlantic Provinces constitute a relatively small part of the market.

The available information indicates that the Amherstburg plant has a freight-cost advantage over its nearest competitors in the U.S.A. to most consuming locations in those areas of Ontario and Quebec where about two-thirds of its market is located. Suppliers in the U.S.A. were said to be competitive in the Prairies. However, the principal competition in this region is now probably from the Western Chemicals plant, at Two Hills, Alberta.

Tariff Considerations

Calcium chloride is entered under tariff items 208a(1), 208a(2) and end-use item 208d.

	<u>British Preferential Tariff</u>	<u>Most- Favoured- Nation Tariff</u>
208a Chloride of lime and hypochlorite of lime:		
(1) When in packages of not less than twenty-five pounds weight each.....		
.....per one hundred pounds	Free	15 cts.
(2) When in packages of less than twenty-five pounds weight each...	17½ p.c.	25 p.c.
208d Calcium Chloride, not in solution, for road-treating purposes only	Free	15 p.c.

In mid-1965, the specific M.F.N. duty under item 208a(1) was equivalent to an ad valorem rate of about eight per cent. It was said, at the public hearing, that in 1935, when the item was introduced into the Customs Tariff, the ad valorem rate was equivalent to about 15 p.c.⁽²⁾

Allied Chemical Canada, Limited, on behalf of Brunner Mond Canada, Limited, recommended rates of 15 p.c., B.P. and 20 p.c., M.F.N.

⁽¹⁾ Transcript, Vol. 21, p. 3043

⁽²⁾ Same, Vol. 21, p. 3046; Vol. 80, p. 12171

for "calcium chloride under Brussels Tariff Nomenclature heading 28.30." (1) They were supported by Dow Chemical of Canada Limited. (2) Heading 28.30 is worded as follows: "Chlorides and oxychlorides." The new item would replace the provisions of existing items 208a(1), 208a(2) in so far as they refer to calcium chloride classified by heading 28.30, and end-use item 208d. The effect of the proposal is shown below.

<u>Existing Item</u>	<u>Existing Rates</u>		<u>Proposed Rates</u>	
	<u>B.P.</u>	<u>M.F.N.</u>	<u>B.P.</u>	<u>M.F.N.</u>
208a1	Free	8 p.c. (a)	15 p.c.	20 p.c.
208a2	17½ p.c.	25 p.c.		
208d	Free	15 p.c.		

(a) Ad valorem equivalent at published prices in 1963, 1964 and 1965

Imports under the B.P. Tariff have been negligible. Most imports since 1950 have been from the U.S.A. and dutiable at about 15 p.c., the rate of duty under tariff item 208d. The change proposed by Brunner Mond would, therefore, increase the effective rate for most imports from 15 p.c. to 20 p.c.

The Canadian Pharmaceutical Manufacturers Association, whose members use very small amounts of the chemical, made a submission which would have the effect of supporting the rates proposed by Allied Chemical. (3)

Calcium chloride was one of a list of materials in which Polymer Corporation Limited expressed an interest as a consumer; the company proposed that end-use item 851 be continued with free entry under all tariffs. (4)

The Canadian Pulp and Paper Association opposed any increase in tariff rates, either now or in the future, in respect of chemicals used by the pulp and paper industry; calcium chloride was included in the list of chemicals submitted by the Association. (5)

In support of its rate proposals, Allied Chemical claimed that the small size of the Canadian market prevented the establishment of a plant comparable in size with those in the U.S.A. and therefore that the Canadian operation had higher costs of production. The company also claimed that the seasonal fluctuation of demand is greater in Canada than in the U.S.A. and that this involves greater storage costs in building up supplies to meet the peak summer demands. The spokesman said that with increased protection the company could in-

(1) Transcript, Vol. 21, p. 3016

(2) Same, Vol. 21, p. 3002

(3) Same, Vol. 87, p. 13321

(4) Same, Vol. 89, p. 13502

(5) Same, Vol. 85, p. 13006, 13012

crease its share of the Canadian market, though, as noted below, the company also indicated that it already was operating at capacity.

The Brunner Mond plant at Amherstburg was expanded four times during the period 1939-45 and again in 1957. The primary reason for establishing the plant was to produce sodium carbonate (soda ash). The effluent must be disposed of as waste unless processed into calcium chloride.

At the hearing, early in 1961, the company spokesman said that Brunner Mond operated at full capacity, twelve months of the year. At the public hearing on May 14, 1962, he amplified this, saying:

"we have sufficient raw material effluent to supply the entire market in Canada. We have not the facilities to take this material to finished usable form at the present time."(1)

When asked about the capacity of other producers he replied, "It is our belief that there is not sufficient productive capacity in Canada at this time to serve the market."(2) These statements indicate that imports are required to supplement domestic supplies; the spokesman for Brunner Mond indicated that it was one of the major importers of calcium chloride, to supplement its own production. After the plant expansion of 1957, imports declined from 45,000 tons to 18,000 tons in 1961 when the company was operating at full capacity. Imports increased sharply to 40,000 tons in 1962 and, towards the end of 1963, Brunner Mond announced another expansion of its Amherstburg plant. Imports in 1963 and 1964 were 31,000 tons and 32,500 tons respectively.

In 1959, the published price in Canada was \$34 a ton f.o.b. plant for the flake in bags; in 1963, the price was \$37 a ton. When asked if reducing the price of calcium chloride would increase the company's share of the Canadian market, the spokesman replied "As a practical matter, no; because we are selling everything we make."(3)

ALUMINUM CHLORIDE

Aluminum chloride is commercially available in an anhydrous form and as a 50.3 per cent solution (32 degrees Baumé). The anhydrous form and the solution are manufactured by different processes, using different raw materials, and they are used in different applications. They are not economically convertible from one form to the other. The anhydrous forms, by far the more important, are dealt with below, followed by a discussion of the solution.

Anhydrous Aluminum Chloride

Aluminum chloride, anhydrous, is a yellow crystalline solid with powerful dessicant properties. Produced by the reaction of high purity molten aluminum and gaseous chlorine, it is available as a

(1) Transcript, Vol. 80, p. 12172

(2) Same, Vol. 80, p. 12172

(3) Same, Vol. 21, p. 3053

commercial anhydrous grade and as a commercial crystalline grade; a very pure grade for pharmaceutical purposes is also sold. The commercial anhydrous grade is the common form.

Canadian production of aluminum chloride was discontinued in 1956, and until 1960 it was not produced in Canada. In that year, three companies began production of anhydrous aluminum chloride: Brunner Mond Canada Limited, an affiliate of Allied Chemical Canada Limited, at Amherstburg, Ontario; St. Clair Chemical Limited at Sarnia, Ontario; and Welland Chemical Company Limited, at Port Colborne Ontario.

Canadian consumption of aluminum chloride increased steadily during the late fifties and in 1959 the market absorbed about 3.3 million pounds, valued at \$453,000. The market continued to expand after Canadian production was begun and, in 1962, took about four million pounds, valued at approximately \$500,000. Imports in 1962 were approximately five per cent of Canadian market requirements; all imports were from the U.S.A. Exports have achieved considerable importance and, in 1963 and 1964, represented at least one-third of total sales by Canadian producers.

Anhydrous aluminum chloride is used mainly in organic synthesis (Friedel-Crafts reaction) and as an alkylation catalyst. The principal products made by processes using aluminum chloride are synthetic rubber, plastics and detergents.

The available information indicates that the largest use of the product is in the production of synthetic rubber. In the years 1957-59, the three years that immediately preceded the beginning of production in Canada, the value of duty-free imports was more than 90 per cent of the total value of imports. By far the greatest part of these would probably be entered duty-free under tariff item 851, for the manufacture of synthetic rubber. The location of the synthetic rubber industry and of the soap and plastics industries places the domestic market predominantly in southwestern Ontario, the region in which all of the Canadian producing plants subsequently were established.

During the period 1956 to mid-1960, when there was no production in Canada, all supplies were imported from the U.S.A. In this period imports increased steadily to a peak, for the year 1959, of about 3.3 million pounds. In 1961, the first full year of Canadian production, imports declined to 330,000 pounds, and have ranged between 200,000 and 600,000 pounds annually since then. In the years 1961-63, nearly all imports were entered under tariff items which impose a duty whereas before 1960 by far the largest part was admitted duty-free. The importation of dutiable aluminum chloride possibly is by consumers some considerable distance from southwestern Ontario, or by those having some reason other than price for buying at least part of their requirements from an outside source. Imports in 1962, however, were less than five per cent of the estimated Canadian consumption.

Free and Dutiable Imports of Aluminum Chloride, 1957-64

	<u>Free Imports</u>		<u>Dutiable Imports</u>		<u>Total Imports</u>	
	'000 lb.	\$'000	'000 lb.	\$'000	'000 lb.	\$'000
1957	2,426	343	478	50	2,904	393
1958	2,913	423	388	37	3,300	460
1959	2,980	423	357	30	3,337	453
1960	2,138	324	292	25	2,430	349
1961	*	*	330	25	330	25
1962	*	*	193	20	193	20
1963	3	*	366	28	368	28
1964	..	..	..	..	588	70

Source: D.B.S., Trade of Canada, Imports, s.c. 8252

In 1963 and 1964, the only two years for which export data are available, Canada exported substantial quantities of aluminum chloride. It is probable that Canadian producers also exported anhydrous aluminum chloride in 1961 and 1962. In 1963, exports were 2.1 million pounds valued at \$229,000 and in 1964, 2.6 million pounds valued at \$313,000. Exports were between four and six times as large as imports. The U.K. accounted for more than half of the exports in 1963 and for three-quarters of the total in 1964. The U.S.A. was the other major destination, with the remainder exported to the Netherlands, Brazil, Belgium and Luxembourg and France.

Exports of Aluminum Chloride, by Principal
Country of Destination, 1963 and 1964

	<u>1963</u>		<u>1964</u>	
	'000 lb.	\$'000	'000 lb.	\$'000
U.K.	1,132	138	1,951	249
U.S.A.	705	65	509	52
Brazil	61	8	89	10
Netherlands	173	19	-	-
Belg. & Lux.	-	-	11	1
France	-	-	2	3
Total	2,070	229	2,561	313

Source: D.B.S., Trade of Canada, Exports, s.c. 40428

Anhydrous aluminum chloride is sold, in Canada and in the U.S.A., f.o.b. plant. Canadian prices are not published but, at the time of the hearing in January 1961, the price of the commercial grade was said to be \$14.85 to \$14.90 per 100 pounds, in carload lots. The comparable price in the U.S.A. at that time was \$16 a hundredweight. Prices in the U.S.A. declined to \$12 a hundredweight in 1962 and 1963. Because the product reacts violently with the moisture of the air, it must be handled with considerable care and is usually packaged in

steel drums containing either 100 or 625 pounds of the chemical. Aluminum chloride is commercially available in various degrees of fineness.

Aluminum Chloride Solution

Aluminum chloride solution is produced by the reaction of aluminum hydrate and hydrochloric acid. It is used principally as an antacid in pharmaceuticals, as a hardening agent in photographic fixing solutions, in the production of wet-strength papers and in the purification of glycerine for soaps. It is used for other purposes in much smaller quantities.

In Canada, aluminum chloride solution is produced only by Nichols Chemical Company Limited, an affiliate of Allied Chemicals Canada Limited, at Sulphide, Ontario. The Sulphide plant is essentially for the manufacture of acids, particularly sulphuric, and the value of shipments of aluminum chloride solution constitutes a very small part of the total value of shipments of the plant.

At the time of the hearing in 1961, Nichols Chemical estimated that imports, all from the U.S.A., were valued at about \$10,000 annually. The company spokesman said that this was an important part of the Canadian market. Most of the Canadian market is in Ontario and Quebec. The potentially competitive plants in the U.S.A. are located in the States of Illinois, Massachusetts and New Jersey, a considerable distance from the main Canadian market area.

Aluminum chloride solution is sold in a concentration of about 50.3 per cent aluminum chloride, and the consequent transportation of as much water as chemical makes long distance transportation uneconomic. This was cited as a reason why there were no known imports from overseas. The chemical is shipped either in special tank cars or in glass carboys. When carboys are used, return freight on the empty container is paid by the consumer. At the time of the hearing, January 1961, the price in Canada, f.o.b. plant, was said to be \$7.75 per 100 pounds, about 25 per cent more than the comparable price in the U.S.A. of \$6.25 per 100 pounds. These prices were apparently on a basis of a 100 per cent aluminum chloride content. Prices published in the U.S.A. are for 32° Bé solution which contains approximately 50 per cent of aluminum chloride.

Tariff Considerations

Aluminum chloride, both anhydrous and in solution, is entered under tariff item 211a at rates of Free, B.P. and 10 p.c., M.F.N.; it can also be entered under end-use items 851 and 921, duty-free under both the B.P. and M.F.N. Tariffs. Almost all imports are of the anhydrous form.

	British Preferential Tariff	Most- Favoured- Nation Tariff
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Item 211a

Chloride of aluminum, or choralum
chloralum

Free

10 p.c.

During 1962 and 1963, the latest years for which the information is available, practically all imports were under item 211a, at 10 p.c. All known imports have been from the U.S.A.

At the public hearing Allied Chemicals proposed "that the rates of duty on aluminum chloride be 15% B.P. and 20% M.F.N. under Brussels Nomenclature Heading 28.30."⁽¹⁾

Polymer Corporation requested continued free entry for the product, in an end use item such as 851.⁽²⁾

Naugatuck Chemicals Division of Dominion Rubber Limited informed the Board that it had an interest in aluminum chloride but that it took no issue with the rates proposed providing that the Board also recommended those rates which would be proposed by the company for the products which it manufactures.⁽³⁾

The Canadian Pharmaceutical Manufacturers Association listed aluminum chloride as one of the more important chemicals used by its members. In its submission, the Association supported rates of 15 p.c., B.P. and 20 p.c., M.F.N. for chemicals made in Canada.⁽⁴⁾

The principal reason advanced by Allied Chemicals for its proposed increase in rates on the anhydrous material was that the size of the Canadian market limited the size of production facilities to "less than optimum size". The spokesman for the company said:

"The Canadian manufacturer is ... at a serious cost disadvantage as compared with the American producers who represent a major competitive force ... Imposition of the duty is recommended as a balancing factor for the cost disadvantage under which this newly formed segment of the Canadian chemical industry must operate."⁽⁵⁾

The discussion at the hearing indicated that the principal competition was from other Canadian producers. Imports from the U.S.A. declined from 3.3 million pounds in 1959 to approximately one tenth of this amount in 1961, when there was again Canadian production of the chemical. The discussion also brought out the fact that the existing situation would not be changed by an increase in rates. The Brunner Mond representative said that the Canadian price was principally due to excess capacity in Canada.

The company spokesman said that a major purpose of the tariff would be to protect Canadian producers in the event of a major price reduction in the U.S.A. However, for the principal uses, the product is entitled to duty-free entry under end-use tariff items, such as item 851; for these uses, the margin between Canadian and U.S. prices would reflect only the difference in freight costs to consuming locations. Moreover, in 1963 exports were nearly six times as large as

(1) Transcript, Vol. 20, p. 2898

(2) Same, Vol. 89, p. 13502

(3) Same, Vol. 6, p. 899-900

(4) Same, Vol. 87, p. 13321

(5) Same, Vol. 20, p. 2899

imports and in 1964, four times as large. By this time exports were apparently taking about one third of Canadian production, and were competing in Europe, the U.S.A. and Brazil.

Allied Chemicals supported its proposed rates for aluminum chloride solution on the grounds that Canadian costs were much higher than in the U.S.A. and that the higher rates of duty were essential for the preservation and expansion of the company's market in Canada. Most of the market served by the company's affiliate, Nichols Chemical, is in Ontario and Quebec and the plant at Sulphide is more favourably located to serve most of this area than the nearest potential suppliers in the U.S.A., particularly because of the relatively low concentration in which the product is sold and the cost of return freight on the empty carboys. At the time of the hearing Nichols Chemical was able to charge 25 per cent more, f.o.b. Sulphide, than the price at plants in the U.S.A. although the M.F.N. rate of duty was only 10 p.c.

Neither Naugatuck Chemicals nor the Pharmaceutical Manufacturers indicated why the proposed rates were appropriate specifically for aluminum chloride. Polymer's interest was principally in continuation of end-use item 851.

None of the parties who made representations to the Board indicated why the B.P. rate should be increased from zero to 15 p.c., particularly in view of the fact that, in recent times, the product had not been imported from any country other than the U.S.A.

AMMONIUM CHLORIDE

The Product and the Industry

Ammonium chloride, or sal ammoniac, is a white crystalline powder, soluble in water. It is commercially available as a powder, in pellets and in bars. A pharmaceutical grade of greater purity is also available. The major uses of the chemical are in the manufacture of dry cell batteries and as a galvanizing and soldering flux; it also has a number of minor uses.

At the public hearing of January 23, 1961, ammonium chloride was said to be produced in Canada only by Canadian Industries Limited (C.I.L.) at Hamilton, Ontario. The company produces only the powdered form and the pellets, and imports small quantities of the bars from the U.K. for resale. The raw materials are sodium chloride (common salt), ammonia and gaseous sulphur dioxide. The salt is purchased but the latter two materials are available from other operations of the company. Sodium sulphite is a co-product of the process of manufacture and is produced in a fixed ratio of 56 per cent sodium sulphite to 44 per cent ammonium chloride.

The plant at Hamilton was built during World War II to provide a domestic source of ammonium chloride and four other chemicals which could not readily be imported at that time. These were sodium sulphite, sodium hyposulphite (thiosulphate), zinc chloride and zinc ammonium chloride. Production at Hamilton is by a batch process. The company spokesman said that the capacity of the plant was sufficient

to supply the entire Canadian market and that, at least for a market of this size, the batch process was economic.⁽¹⁾

The Market

According to data submitted by C.I.L., the largest single use of ammonium chloride is for making dry cell batteries. The percentage distribution of C.I.L.'s 1959 production, by use, is given below:

<u>Industry and Use</u>	<u>Per cent of 1959 Production</u>
Electrical (dry cell batteries)	38
Steel Products (galvanizing and soldering)	26
Other Industries	18
Captive Use (chemicals)	<u>18</u>
	100

Source: Transcript, Vol. 20, p. 2943

The uses by "other industries" above include the production of adhesive resins for wood, of yeast cultures and of explosives, the dyeing of textiles and furs and the processing of ores. C.I.L.'s captive use is mainly for the production of zinc ammonium chloride.

The spokesman for C.I.L. said the company ordinarily supplied between 90 and 95 per cent of the total market in Canada. With imports of the order of 100 tons to 300 tons annually, at that time, this would indicate a commercial market for about 2,500 tons of ammonium chloride annually. At the published price in the U.S.A. of six cents a pound, the market value would be about \$300,000. Trade publications suggest that the growing popularity of long-life dry cells, which do not use ammonium chloride in their manufacture, may result in a decrease in the use of the chemical in its largest application.⁽²⁾

Foreign Trade

Until 1957, imports were about 300 tons annually; after 1957 imports declined steadily and were only 16 tons in 1963. Although complete data on exports are not available, it appears that, since 1957, they have exceeded imports by substantial amounts. Canadian exports to U.S.A., according to U.S. statistics, were between about 400 and 650 tons annually from 1959 until 1962. In 1963, the last year for which data are available, imports into Canada were 16 tons, valued at \$4,000 and exports to the U.S.A. were 116 tons, valued at \$12,000. The differences in the average values of exports and imports probably indicates different grades or forms of ammonium chloride.

Ammonium chloride is imported almost entirely from Britain, the United States and Western Germany. Poland and the Netherlands also supplied small quantities in earlier years.

⁽¹⁾ Transcript, Vol. 20, p. 2942, 2950

⁽²⁾ Oil, Paint and Drug Reporter, June 25, 1962, p. 27

Imports of Ammonium Chloride by Country of Origin,
Selected Years, 1953-63

	<u>U.K.</u>	<u>West Germany</u>	<u>U.S.A.</u>	<u>Other</u>	<u>Total</u>	
		- tons	-		tons	\$
1953	168	24	35	17	244	29,056
1956	163	71	25	31	290	38,431
1958	12	71	30	10	123	14,618
1960	30	61	9	-	99	12,432
1961	28	42	5	-	75	10,953
1962	32	14	2	-	48	8,648
1963	12	-	4	-	16	3,964

Source: D.B.S., Trade of Canada, Imports, s.c. 8262

From 1952 to 1957, imports varied between approximately 200 and 300 tons annually, most originating in the U.K. From 1958 to 1961 they declined sharply and Western Germany supplied the largest proportion of the much smaller total. Imports continued to decline in 1962 and 1963. The ammonium chloride imported from the U.S.A. has an average value about three to five times that of the product imported from West Germany, possibly reflecting the inclusion of considerable amounts of the much higher priced pharmaceutical grade.

In 1955, 1956 and 1957, entries into British Columbia were about half of the total imported. After 1957, entries into British Columbia declined to less than 10 tons annually and most imports were entered in Quebec. At the public hearing, the C.I.L. spokesman said that late in 1957 a major user in British Columbia found that it could use the Canadian product in place of that formerly imported from the U.K., and that this change accounted for the sharp reduction in imports.⁽¹⁾ The discussion at the hearing indicated that some of the imports were probably of pharmaceutical grade from the U.S.A., and that some were imports of bars of ammonium chloride from the U.K., by C.I.L., for resale for soldering and galvanizing.

Imports by Province of Entry, 1955-63

	<u>Quebec</u>	<u>Ontario</u>	<u>British Columbia</u>	<u>Total</u> ^(a)
		- tons	-	
1955	109	16	141	283
1956	92	37	147	290
1957	28	88	152	274
1958	87	27	8	123
1959	75	17	8	101
1960	87	11	2	99
1961	56	15	-	75
1962	32	13	3	48
1963	2	14	-	16

^(a) Includes small amounts into the Prairie Provinces in some years

Source: D.B.S., s.c. 8262

⁽¹⁾ Transcript, Vol. 20, p. 2946

Pricing Policy and Prices

The pricing policy of C.I.L. was outlined by a spokesman for the company as follows:

"Ammonium chloride is sold at prices which are designed to secure for the company essentially all of the domestic market. The only effective policy for this purpose is to price the product so that the delivered cost to the user is lower for domestic than for imported material."(1)

Consumers in Canada are supplied by the manufacturer either directly from the plant at Hamilton or from warehouses located in Montreal, Toronto, Winnipeg, Calgary, Edmonton and Vancouver. In regions east of Toronto, such as Montreal, this policy was said to require the company to meet the very low prices of German suppliers and to result in lower prices for the domestic product in the Montreal area than in the Toronto-Hamilton area where the company's plant is located.(2)

The product is packaged and sold in 100 pounds bags and all carload or truckload shipments are from the Hamilton works. It appears that about 85 per cent of the market is in Ontario and Quebec. The price is quoted on an f.o.b. plant basis for shipments in truckload or carload quantities. For less than carload lots, prices are quoted either delivered at warehouse locations or f.o.b. warehouse with price discounts for large purchases. At other locations, the customer has an additional freight cost. The spokesman said that at some locations across Canada the cost of freight to the user was more than 50 per cent of the carload selling price, f.o.b. works. Even so, the spokesman noted that:

"it is our belief that the delivered cost to the customer in Canada who is buying the product of Canadian manufacture is significantly below the delivered cost from non-Canadian sources; otherwise we wouldn't be securing such a substantial share of the market."(3)

No price information on the Canadian product was made available in the public submission by C.I.L., but in the course of the discussion it was noted that the average value of material imported from Germany was about five cents a pound, and for that from the U.S.A., about 17 or 18 cents a pound. At the time of the hearing the published U.S. price was six cents a pound for the fine white grade, which suggests that the importations from the United States contain a large proportion of pharmaceutical grade product or other specialized forms. The pharmaceutical grade was priced at 17 to 20 cents a pound in the U.S.A. at that time.

(1) Transcript, Vol. 20, p. 2947

(2) Same, Vol. 20, p. 2958-9

(3) Same, Vol. 20, p. 2967

Tariff Considerations

Ammonium chloride is imported into Canada as "sal ammoniac" under item 208j, "nitrate of ammonia, n.o.p. and sal ammoniac", free of duty under the British Preferential Tariff and at 25 p.c. under the Most-Favoured-Nation Tariff.

Only C.I.L. made formal representation to the Board respecting ammonium chloride. The company recommended that the product be dutiable at 15 p.c., B.P. and 20 p.c., M.F.N.⁽¹⁾, an increase in the B.P. rate from free to 15 p.c. and a decrease in M.F.N. rate from 25 p.c. to 20 p.c. The British margin of preference would thus be changed from the existing 25 per cent ad valorem to 5 per cent ad valorem.

The Canadian Pharmaceutical Manufacturers Association in general submissions listed ammonium chloride as of minor importance in use by its members. The effect of the Association's recommendation would be to support the proposal of C.I.L.⁽²⁾

The C.I.L. spokesman contended that, for tariff purposes, the company's operation at Hamilton, Ontario, should be viewed as a whole because the five chemicals produced on that site use "substantially the same techniques of manufacture by substantially the same kind of people with the same skills."⁽³⁾ He said that it was anomalous that these chemicals should be subject to different rates of duty.⁽⁴⁾

The five products manufactured at Hamilton are listed below, together with existing rates of duty, apart from those of end-use items, and the rates proposed for them by C.I.L.

<u>Chemical</u>	<u>Existing Item</u>	<u>Existing Rates</u>		<u>Rates Proposed by C.I.L.</u>	
		<u>B.P.</u>	<u>M.F.N.</u>	<u>B.P.</u>	<u>M.F.N.</u>
Ammonium chloride	208j	Free	25 p.c.	15 p.c.	20 p.c.
Zinc chloride	208s	Free	20 p.c.	15 p.c.	20 p.c.
Zinc ammonium chloride	711	15 p.c.	20 p.c.	15 p.c.	20 p.c.
Sodium sulphite	210	Free	12½ p.c.	15 p.c.	20 p.c.
Sodium thiosulphate					
(hydrated)	711	15 p.c.	20 p.c.	15 p.c.	20 p.c.
(anhydrous)	208t	Free	15 p.c.	15 p.c.	20 p.c.

The spokesman concluded his observations by saying:

"it is our submission that the success of this operation is dependent largely on the ability of the company to supply most of the domestic requirements for the above range of products at prices which will return a profit.

(1) Transcript, Vol. 20, p. 2935

(2) Same, Vol. 87, p. 13321

(3) Same, Vol. 20, p. 2936

(4) Same, Vol. 20, p. 2937

"In essence, we are saying here is a situation where one has to deal with the overall situation when considering investments, the number of people employed and other aspects..."(1)

C.I.L., the only producer of ammonium chloride in Canada, supplies practically the whole market. Imports have been declining for several years and in 1963 were only 16 tons, less than one per cent of the estimated total use. Imports appear to consist of a few tons from the U.S.A., for pharmaceutical purposes, and a few tons from the U.K. to locations that are readily accessible to ocean transport. A large part of the remaining small imports from the U.K. may be of bars of ammonium chloride, which are not manufactured in Canada. C.I.L. imports some of these to supply its customers.

Exports to the U.S.A. are usually much larger than total imports. In the five years, 1959-1963, exports to the U.S.A. were from four to ten times as large as imports.

ANTIMONY TRICHLORIDE

At the public hearing in January 1961, the Canadian Color Makers Association informed the Board of its interest in antimony trichloride, a material used in the manufacture of coloured pigments. A survey of the Association's members indicated that in 1958 they used 22,008 pounds valued at \$10,393 and, in 1959, 23,027 pounds valued at \$10,933.(2) Antimony trichloride was not produced in Canada and there were said to be no substitutes for it in the colormakers' processes.

Antimony trichloride is also used for pharmaceuticals, for fireproofing textiles and as a catalyst in organic synthesis. However, no other representations made to the Board related specifically to this chemical. The available data suggest that other uses are of little economic importance in Canada.

Antimony trichloride is entered under tariff item 208, free of duty under both the B.P. and M.F.N. Tariffs. The Association proposed continued free entry under both Tariffs, while the product is not made in Canada, when entered for use in the manufacture of synthetic pigments. When made in Canada, the rates proposed for it were 15 p.c., B.P. and 20 p.c., M.F.N.(3)

The spokesman supported free entry because, while antimony trichloride is not made in Canada, "the lowest possible duty status would be desirable..."(4) In a more general statement to indicate why rates of 15 p.c., B.P. and 20 p.c., M.F.N., rather than continuation of "the lowest possible duty status" would be appropriate when the product is produced in Canada, the spokesman stated:

"Our interest ... is in Canadian production ... and we recognize that once there would be Canadian production that there is every reason why it should be dutiable to protect the Canadian manufacturer."(5)

(1) Transcript, Vol. 20, p. 2937

(2) Same, Vol. 20, p. 2977

(3) Same, Vol. 20, p. 2977; Vol. 93, p. 14205, 14210

(4) Same, Vol. 20, p. 2978

(5) Same, Vol. 20, p. 2980

A spokesman for the Industry Committee opposed the principle of end-use items in the following terms.

"If exceptional tariff treatment is to be provided for the products referred to by the Canadian Color Makers, we would prefer to see these products included on list 3 without any end-use qualifications. Such a course would appear to yield the same benefits as far as the Canadian Color Makers are concerned, but would avoid introducing discriminatory criteria into the tariff. If non-availability in Canada represents sufficient justification for granting free entry to various chemicals used in pigment manufacture, we see no reason for denying the same treatment to other users of the same chemicals."(1)

List 3 was a list of products for which rates of duty lower than the uniform heading rates (15 p.c., B.P. and 20 p.c., M.F.N.) were proposed as long as the products are not made in Canada.

BARIUM CHLORIDE

Barium chloride was the subject of representations by the Canadian Color Makers Association and the Electric Reduction Company of Canada Limited (Erco) at a hearing in January 1961. Barium chloride is used by the colormakers for the manufacture of pigments and by Erco for the purification of chemical process materials.

The product is not made in Canada, and both the Association and the company stated that, to their knowledge, there were no substitutes for it in their applications. They also informed the Board that their supplies originated in West Germany.

Imports of barium chloride were valued at \$55,000 to \$70,000 annually from 1956 to 1961; they increased sharply in 1962 and 1963 when they were valued at \$100,000 and \$210,000 respectively. The use by the color makers was said to be about \$10,000 annually, at the time of the hearing;(2) Erco reported a considerably greater use.

Barium chloride is entered under item 208t at rates of Free, B.P., and 15 p.c., M.F.N. As a material for the manufacture of pesticides, it could be entered duty-free under item 791. The Color Makers Association proposed that when for use in the manufacture of synthetic pigments, barium chloride should be free of duty under both the B.P. and M.F.N. Tariffs, until made in Canada. When it is produced in Canada, they supported rates of 15 p.c., B.P. and 20 p.c., M.F.N.(3)

Erco recommended no change in the rates while the product is not made in Canada. The company spokesman indicated that he agreed with the colormakers on the rates proposed when the product becomes made in Canada.(4)

(1) Transcript, Vol. 20, p. 2989-90

(2) Same, Vol. 20, p. 2976

(3) Same, Vol. 20, p. 2977, 2980; Vol. 93, p. 14210

(4) Same, Vol. 21, p. 2996

Both Erco and the Industry Committee opposed the introduction of an end-use item, preferring to extend the lower rates to all users while the product is not made in Canada.

The colormakers' spokesman said that he favoured protection for Canadian manufacturers but that "the lowest possible duty status would be desirable" for products which were used by his Association but which were not made in Canada.⁽¹⁾

The spokesman for Erco told the Board that his company "would prefer to see a rate of duty on most chemicals and would prefer to see British Preferential maintained.

"If it comes in duty free from all sources then you have lost the British Preferential, and if the product can be manufactured in Canada eventually there is a danger that by duty free entry now you establish a price level so low that no Canadian manufacturers would ever get off the ground."⁽²⁾

In further questioning he was asked:

- Q. "Of course, the maintenance of a British preference is not a very useful thing if there is no British source?"
- A. "We must always look to the fact that there may be a British source one day, or there may be a Canadian source."⁽³⁾

FERRIC CHLORIDE; FERROUS CHLORIDE

At a hearing in January 1961, Dow Chemical of Canada Limited informed the Board that ferric chloride and ferrous chloride were not produced in Canada and that they were marketed in Canada by the company. Both chemicals are entered under item 208t, Free, B.P. and 15 p.c., M.F.N., and the ferric chloride could be entered duty-free under items 219a(2) or 791 when for insecticidal use.

Dow recommended that the present rates of duty remain unchanged. The company spokesman added, "but if other interested parties or users feel that there is justification for a lower rate, we would not object."⁽⁴⁾

The Canadian Pharmaceutical Manufacturers Association also proposed rates of Free, B.P. and 15 p.c., M.F.N. for chemicals not made in Canada and used for the manufacture of pharmaceutical products, unless otherwise provided for.⁽⁵⁾ Both ferric chloride and ferrous chloride were listed by the Association as relatively unimportant chemicals which its members used.

(1) Transcript, Vol. 20, p. 2978

(2) Same, Vol. 21, p. 2997

(3) Same, Vol. 21, p. 2998

(4) Same, Vol. 22, p. 3168

(5) Same, Vol. 87, p. 13321

Naugatuck Chemicals Division of Dominion Rubber Company Limited listed ferrous chloride as one of its raw materials, and informed the Board that it took no issue with the rates proposed "providing that the Board also recommends those rates which will be proposed to you for the products which we manufacture."⁽¹⁾

Only about 1,000 pounds of ferrous chloride valued at \$80 were said to be used in Canada, annually. However, much greater amounts of ferric chloride were said to be used. Ferric chloride is used mainly to treat sewage; some is also used in photo-engraving and etching. The largest use was said to be by municipalities, the city of Toronto alone using 1,275,000 pounds in 1961. This was thought to be about 75 per cent of Canadian use.

The price of the U.S.P. grade of ferric chloride is more than double that of the sewage grade. In 1965, the price of the U.S.P. grade was $8\frac{1}{2}$ cents a pound, or \$8.50 per hundredweight; the price of the sewage grade was \$4 a hundredweight, f.o.b. plants in the U.S.A.

Neither the Pharmaceutical Association, Dow Chemical nor Naugatuck Chemicals supported specifically the retention of the existing M.F.N. duty of 15 p.c. on either product. None of the parties would benefit by the existence of the duty and the Pharmaceutical Manufacturers and Naugatuck might, in fact, benefit from its removal. Most, if not all, imports are from the U.S.A. and are subject to the 15 p.c. duty. Because the greatest use is for the treatment of sewage, the incidence of the tariff is mainly on municipal governments.

Because of the small size of the market, there was no expectation of Canadian manufacture of ferric and ferrous chloride in the near future. If the products become made in Canada, the proposals of Dow Chemical and the Pharmaceutical Manufacturers would support the rates recommended by the Industry Committee for heading 28.30, namely 15 p.c., B.P. and 20 p.c., M.F.N. Naugatuck Chemicals said it took no issue with these rates.

LEAD CHLORIDE

Lead chloride is used in the production of lead salts and lead chromate pigments, and is used as an analytical reagent. It is not manufactured in Canada and no competitive substitute is known to be made in Canada. The only known imports are from the U.K. and the total Canadian market is very small.

At a hearing in January 1961, Associated Lead Manufacturers of London, England and the Pigment and Chemical Company Limited of Montreal, Quebec, proposed that the existing rates of Free, B.P. and 15 p.c., M.F.N. under tariff item 208t, be made permanent and not dependent, as at present, on the made-in-Canada status of the product.⁽²⁾

⁽¹⁾ Transcript, Vol. 6, p. 899-900

⁽²⁾ Same, Vol. 21, p. 3068

In opposing permanent free entry, the Industry Committee contended that, if granted, free entry should apply only until the product is made in Canada at which time the rates should become 15 p.c., B.P. and 20 p.c., M.F.N.⁽¹⁾ The spokesman for the Committee did not indicate why such rates would be appropriate specifically for lead chloride when it was made in Canada, though these were the rates generally proposed as a residual provision for chemicals.

In support of permanent free entry under the B.P. Tariff the brief of the two companies stated:

"Our grounds for this suggestion are the retention of an effective British preference, and the benefits accruing to Canadian consuming industries from having an alternative source of supply."⁽²⁾

LITHIUM CHLORIDE

At a hearing in January 1961, Pfizer Canada proposed retention of the existing rates of Free, B.P. and 15 p.c., M.F.N. for lithium chloride. The product is not manufactured in Canada and is now entered under tariff item 208t. Known imports were valued at approximately \$2,000 in 1959 and 1960.

The submission referred to the company's previous representations on lithium hydroxide and stated:

"Since the other lithium salts, which are the subject of this letter, fall into the same category, kindly accept this letter as our brief for each of the above products."⁽³⁾

At the hearing on January 11, 1961, Pfizer Canada stressed the strategic value of lithium products in times of war and stated that production in the U.K. had been established around the time of the first World War, at the instigation of the British Government, to provide a Commonwealth source of these. It concluded, saying, "it is our contention that the preferential rate of duty protection hitherto afforded to British material should be maintained."⁽⁴⁾

Lithium chemicals are manufactured in the United Kingdom by at least two other manufacturers.

MAGNESIUM CHLORIDE

Magnesium chloride is not produced in Canada. Dow Chemical Canada Limited informed the Board that the product was manufactured by its parent company in the U.S.A. and that Dow Canada Limited imported it from Michigan for distribution in Canada. The principal uses were said to be in the manufacture of magnesium metal and of magnesium

(1) Transcript, Vol. 21, p. 3066

(2) Same, Vol. 21, p. 3068

(3) Same, Vol. 21, p. 3069

(4) Same, Vol. 19, p. 2786

oxychloride cements. It is also used as a moistening agent in floor sweeping compounds. The Dow Chemical spokesman said that sales in 1959 were less than \$10,000 which at the then current price of \$3 per hundred pounds would represent imports of about 300,000 pounds.

Magnesium chloride is imported under item 208t, Free, B.P. and 15 p.c., M.F.N. It may be entered free of duty under item 219a(2) or 791, when for insecticidal use. At the hearing on January 24, 1964, Dow Chemical proposed that these rates be retained. As for ferric chloride and ferrous chloride, the company spokesman would not object to lower rates if they were proposed by other interested parties. He also said, as a general principle:

"However, if rates lower than the heading rates [15 p.c., B.P. and 20 p.c., M.F.N.] are recommended by the Board for chemicals not produced in Canada it would seem advisable that some uniform rate should be established for such chemicals so as to avoid discrimination between companies with competitive products."(1)

The spokesman for Dow Chemical did not indicate why the proposed rates were appropriate. However, he did indicate that the small size of the market is the major obstacle to manufacture in Canada and not tariff considerations. The company's general position was that rates of 15 p.c., B.P. and 20 p.c., M.F.N. should apply to products ruled to be made in Canada.

The Canadian Pharmaceutical Manufacturers Association informed the Board that magnesium chloride was used by its members. The Association proposed that chemicals which are not made in Canada and are used in the manufacture of pharmaceuticals be dutiable at rates of Free, B.P., 15 p.c., M.F.N., unless otherwise provided for.(2) No other representations were made to the Board.

MERCURIC CHLORIDE AND MERCUROUS CHLORIDE

Mercuric Chloride

Mercuric chloride is a white, highly poisonous substance which is sold either as a powder or as fine crystals. Mercury constitutes about 74 per cent of the weight of the chemical. Three grades are available: technical, U.S.P. and reagent. All three grades are produced in Canada only by Mallinckrodt Chemical Works Limited at Montreal, Quebec. The company spokesman said that its capacity was sufficient to supply Canadian market requirements.

The principal applications were said to be in fungicides, in preserving wood, as a depolarizer in dry cells and as a chemical catalyst. In all applications, competitive substitutes were said to be available. The spokesman for Mallinckrodt said the company supplied about three-quarters of Canadian demand; the remainder was imported.

(1) Transcript, Vol. 22, p. 3169-71

(2) Same, Vol. 87, p. 13321

Imports of all mercury salts were valued at less than \$10,000 in each of the five years, 1959-63; these data suggest a total market in Canada of less than \$20,000 annually.

Mercuric chloride, other than analytical reagent grade, is now entered under tariff item 711, at rates of 15 p.c., B.P. and 20 p.c., M.F.N. It may be entered duty-free under tariff item 791 as a material for use in the manufacture of pesticides. The analytical reagent grade is dutiable under tariff item 208t, at rates of Free, B.P., 15 p.c., M.F.N.

At the hearing in January 1961, Mallinckrodt proposed continuation of these rates of duty for all grades of mercuric chloride.⁽¹⁾ The company's proposal was conditional on continued free entry for mercury, the principal raw material.

The Canadian Pharmaceutical Manufacturers Association listed mercuric chloride as a product used by its members. It proposed that chemicals made in Canada and used in the manufacture of pharmaceuticals be dutiable at 15 p.c., B.P., 20 p.c., M.F.N.⁽²⁾

The Canadian Federation of Agriculture also expressed an interest in mercuric chloride as a chemical used in the manufacture of pesticides; the Federation proposed free entry under all Tariffs for chemicals so used.⁽³⁾

Mercurous Chloride

Mercurous chloride has a higher mercury content (85 per cent), is less poisonous and is used for somewhat different purposes than mercuric chloride. The principal uses of mercurous chloride are as a fungicide and in pharmaceutical products. Mallinckrodt Chemical Works, the only Canadian producer of the chemical, said that its capacity was sufficient to supply the Canadian market. Three grades are available: technical, National Formulary and reagent. The company does not manufacture the reagent grade because of the small Canadian demand.

The spokesman estimated that the company supplied about two-thirds of the Canadian demand. The available information indicates that the Canadian market for this chemical is smaller than for mercuric chloride.

Mallinckrodt proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N. for all grades of mercurous chloride; except for the A.R. grade it is now entered at these rates under tariff item 711. The spokesman also proposed these rates for the reagent grade but qualified the proposal saying, "If, however, any other party requests a lower rate for the A.R. [analytical reagent] grade when not made in Canada, we have no objection." He then added, "As in the case of mercuric chloride, this recommendation is contingent upon mercury continuing to enter the country duty free."⁽⁴⁾

(1) Transcript, Vol. 21, p. 3071

(2) Same, Vol. 87, p. 13321

(3) Same, Vol. 110, p. 16631

(4) Same, Vol. 21, p. 3074

Mercurous chloride, when for use in the manufacture of fungicides, may be entered duty-free under tariff item 791.

The Canadian Pharmaceutical Manufacturers Association included mercurous chloride in a list of products of minor use to its members. The Association proposed that chemicals, not made in Canada and so used, be dutiable at rates of Free, B.P., 15 p.c., M.F.N., unless otherwise provided for. When products are made in Canada, the Association supported rates of 15 p.c., B.P., 20 p.c., M.F.N.⁽¹⁾

The Canadian Federation of Agriculture indicated an interest in mercurous chloride as a constituent of pesticides. The Federation proposed free entry under all Tariffs for chemicals so used.⁽²⁾

Tariff Considerations

The spokesman for Mallinckrodt supported his proposals for mercuric and mercurous chloride by noting that, "Our experience of better than twenty-five years of producing and selling this product in Canada leads us to consider this level of duty to be adequate."⁽³⁾

The Canadian market for both products is relatively small and the principal raw material, mercury, is entered free of duty.

The pharmaceutical manufacturers took the position that chemicals produced in Canada were entitled to protection. They did not indicate why rates of 15 p.c., B.P. and 20 p.c., M.F.N. would be appropriate specifically for mercurous or mercuric chloride.

The Federation of Agriculture took the position that all chemicals used in the manufacture of products for use in agriculture should be entered free of duty under all Tariffs.

POTASSIUM CHLORIDE

Potassium chloride is a major exception to the classification of chlorides under B.T.N. heading 28.30. All grades and purities of the product are classified under heading 31.04, "Mineral or chemical fertilizers, potassic." The presentation of product information is made in the section of the report on that heading.

TITANIUM TETRACHLORIDE

Titanium tetrachloride is a chemical used mainly in the production of titanium metal. It is produced as an intermediate in one process of the manufacture of titanium dioxide, and it may be used to produce titanium dioxide. At the hearing in January 1961, the discussion suggested that its principal use in Canada, at that time, was probably as a catalyst in the production of various polymers.

(1) Transcript, Vol. 87, p. 13321

(2) Same, Vol. 110, p. 16631

(3) Same, Vol. 21, p. 3071

The chemical is not produced in Canada and the available data indicate that imports were negligible until 1962, when their value increased to \$105,000. Imports in 1963 were valued at \$110,000. It is entered under tariff item 208t at rates of Free, B.P. and 15 p.c., M.F.N. and under end-use item 921, free of duty under both the B.P. and M.F.N. Tariffs, if for use in the manufacture of synthetic resins or plastics.

Laporte Titanium Limited of London, England, proposed that the existing rates of Free, B.P. and 15 p.c., M.F.N. under tariff item 208t should be made permanent and not conditional on the product being ruled as not made in Canada.⁽¹⁾ Laporte indicated that the purpose of its proposal was to maintain the existing margin of preference under the B.P. Tariff. The spokesman for the company said that most imports into Canada were probably for use as a catalyst in polymerization and, therefore, would be free of duty under tariff item 921.

The Industry Committee opposed permanent free entry. It recommended rates of 15 p.c., B.P., and 20 p.c., M.F.N., when the product is made in Canada.⁽²⁾ British Titan Products of London, England supported free entry under the B.P. Tariff while the product is not made in Canada. However, the company's spokesman indicated that it might, in time, manufacture the product in Canada and therefore supported rates of 15 p.c., B.P. and 20 p.c., M.F.N., when ruled made in Canada.⁽³⁾ He said that the Canadian company expected to import titanium tetrachloride from the parent company in England.

Polymer Corporation Limited listed titanium tetrachloride as one of the raw materials which it imported in relatively small amounts, under end-use item 851; it urged the retention of this item.⁽⁴⁾

Neither the Industry Committee nor British Titan Products submitted information specifically in support of the proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N. for titanium tetrachloride when it was produced in Canada. British Titan Products, the most probable eventual producer in Canada, merely said it wished to import the product free of duty until it produced it in Canada, at which time the company wanted to have protection at the proposed rates.

ZINC CHLORIDE

The Product and the Market

Zinc chloride is a white, colourless, deliquescent powder, readily soluble in water and highly corrosive to most metals. It is produced in Canada only by Canadian Industries Limited (C.I.L.) at Hamilton, Ontario, by the reaction of hydrochloric acid with zinc ash or sal ammoniac skimmings. The latter two materials are ordinarily obtained from steel mills in the vicinity of the plant, although small quantities are imported when local supplies are inadequate. The hydrochloric acid is either obtained from other plants of the company or is purchased in Canada.

(1) Transcript, Vol. 21, p. 3117

(2) Same, Vol. 21, p. 3123

(3) Same, Vol. 21, p. 3123

(4) Same, Vol. 89, p. 13501-2

The C.I.L. plant was said to be capable of supplying the entire Canadian market for zinc chloride. However, the company produces only the solution. The anhydrous form was said to be more convenient for use by consumers of small quantities. In addition to the imports by users of the product, C.I.L. and others import some anhydrous zinc chloride for resale.

The company spokesman estimated that imports were about seven per cent of total domestic consumption indicating a total use in Canada of about 2,400 tons annually, on an anhydrous basis. However, the greater part of the zinc chloride manufactured by C.I.L. was said to be used captively, and it therefore seems probable that the market is not in excess of \$150,000 a year.

C.I.L. uses zinc chloride in the production of various compounds and mixtures marketed by the company, including zinc ammonium chloride, chromated zinc chloride and fluxing compounds for galvanizing and soldering. In addition, the product is used in Canada for the manufacture of electrical dry cells, as a preservative and fire retardant for wood and as an agent in the recovery of metals by the flotation process. More than 80 per cent of consumption occurs in Ontario, most of the remainder being in Quebec.

Britain and the U.S.A., together, supply most of the imports, Britain supplying more than the U.S.A. in recent years. West Germany and France are the only other countries from which the product has been imported. Imports are thought to be all anhydrous zinc chloride.

Imports of Zinc Chloride
1957-1963

<u>Year</u>	<u>U.K.</u>		<u>U.S.A.</u>		<u>Total</u>	
	tons	\$'000	tons	\$'000	tons	\$'000
1957	81	15.5	81	19.0	162	34.5
1958	54	9.6	56	12.7	112	22.7
1959	67	12.0	80	12.9	166	28.7
1960	75	14.0	73	13.8	154	29.0
1961	113	21.7	61	13.0	192	38.6
1962	103	20.1	91	20.3	218	46.0
1963	111	22.4	72	16.3	207	43.9

Source: D.B.S., Trade of Canada, Imports, s.c. 8278

A 50 per cent solution of zinc chloride is sold by C.I.L. in carboys, drums, tank cars and tank wagons. The company indicated that it prices zinc chloride at levels which will effectively secure the market within about a 500 mile shipping range of Hamilton.⁽¹⁾

⁽¹⁾ Transcript, Vol. 21, p. 3134, 3139

Tariff Considerations

Zinc chloride is entered under tariff item 208s, free of duty under the British Preferential Tariff and at 20 p.c. under the Most-Favoured-Nation Tariff.

At the public hearing, Canadian Industries Limited proposed that the B.P. Tariff be increased from free entry to 15 p.c., and that the M.F.N. Tariff be maintained at 20 p.c.⁽¹⁾

The Canadian Pharmaceutical Manufacturers Association recommended that, when not made in Canada, chemicals used for the manufacture of pharmaceuticals be dutiable at rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, and at 15 p.c., B.P. and 20 p.c., M.F.N. when they are produced in Canada.⁽²⁾ Zinc chloride was one of the chemicals in which the Association expressed an interest; the proposal, therefore, would support that of C.I.L.

Polymer Corporation Limited urged that end-use item 851 be continued, with free entry under all Tariffs for chemicals used in the manufacture of synthetic rubber. Zinc chloride was one of the chemicals in which the company was interested.⁽³⁾

C.I.L.'s proposal would leave the M.F.N. rate unchanged at 20 p.c. but would increase the B.P. rate from free to 15 p.c. The principal reasons given for this proposal was that it would bring

"the tariff rate structure into greater conformity rather than having varying rates continuing for many years without apparent justification."⁽⁴⁾

and also

"on the ground that if there is abundant capacity to supply the Canadian market the imposition of duty will tend to secure for the Canadian producer a greater share of the market than we have at the present time, even although that is most of the Canadian market."⁽⁵⁾

At the time of the hearing, C.I.L. was supplying about 93 per cent of the Canadian consumption. Imports were said to be only of the anhydrous form, not produced by C.I.L., and about half the imports, at that time, were from the U.S.A. and therefore dutiable at the proposed rate of 20 p.c.

The impact of the proposal thus would be on imports from the United Kingdom. The company spokesman said C.I.L. accounted for about one-third of all imports, all from the U.K.⁽⁶⁾ This would constitute more than 80 per cent of the importations from the U.K. in that year (1959).

(1) Transcript, Vol. 21, p. 3134

(2) Same, Vol. 87, p. 13321

(3) Same, Vol. 89, p. 13503; Vol. 20, p. 2892

(4) Same, Vol. 22, p. 3149

(5) Same, Vol. 22, p. 3149

(6) Same, Vol. 21, p. 3140

If the increase in the B.P. rate to 15 p.c. were to result in the displacement of all of the imports from the U.K. by C.I.L.'s production, it would increase the company's sales by about 100 tons annually. This would add less than five per cent to the company's output; however, it might permit a higher realization on sales were the company able to sell at higher prices because of the increase in the B.P. rate of duty.

SAL AMMONIAC SKIMMINGS

Sal ammoniac skimmings, one of the two principal raw materials for the manufacture of zinc chloride, are also part of Reference 120. The skimmings are a by-product of the process of galvanizing steel, and are used by C.I.L. for their zinc content. The company obtains most of its requirements from two steel mills at Hamilton and said it has imported relatively small quantities when the Canadian supply was inadequate for its requirements. The company has no need to import skimmings in some years, while in others it might import as much as 100,000 pounds.

Although no other Canadian uses of sal ammoniac skimmings were known at the time of the hearing, about one million pounds valued at \$91,000 were imported in 1959, far in excess of the imports reported by C.I.L. for the manufacture of zinc chloride. Inquiries led to the conclusion that the published data included zinc ammonium chloride and sal ammoniac skimmings in the same statistical class. Sal ammoniac skimmings are entered under item 210h, free of duty under all Tariffs; zinc ammonium chloride is entered under item 711 at rates of 15 p.c., B.P. and 20 p.c., M.F.N. In view of this, it was assumed that all free imports were of the skimmings and all dutiable imports were of zinc ammonium chloride.

The data, thus clarified, confirmed the statements of the spokesman for C.I.L. In the last five years for which data are available, 1959-63, imports declined from 76,000 pounds valued at \$10,800 in 1959, to 2,000 pounds valued at \$500 in 1961. No imports were recorded in 1962 or 1963.

No one, either at the time of the hearing on zinc chloride or at the hearing in September 1962 when tariff item 210h was specifically called for hearing, expressed any interest in changing the existing provision of the Customs Tariff for the skimmings. The provision for them under item 210h replaces an earlier one under tariff item 345. This latter item was referred to the Board "with reference to sal ammoniac skimmings." When specific provision for the skimmings was deleted from item 345 and they were provided for by item 210h, the Board, acting under the authority conferred on it by the Minister, added item 210h to the terms of Reference 120. Public notice to this effect was given in December, 1961.

At the hearing of September 10, 1962, the Industry Committee expressed the view that:

"The Committee does not consider sal ammoniac skimmings to be chemicals and has neither received nor reported a tariff recommendation for them.

"Sal ammoniac skimmings appear to be classified in Brussels Nomenclature by heading 26.03 which relates to ash and residues containing metals or metallic compounds ...

"In the absence of any recommendation for disposal of item 210h, the Committee notes that continuation of the item as it now stands in the Tariff would appear to be entirely compatible with the recommended structure of chemical tariff classifications based on Brussels Nomenclature." (1)

OTHER CHLORIDES AND OXYCHLORIDES

In addition to the chlorides which have been discussed, several other chlorides and oxychlorides were brought to the attention of the Board by companies or industry associations which had an interest in them.

Aluminum Chlorhydroxide

At the hearing on May 30, 1963, the Toilet Goods Manufacturers Association informed the Board that aluminum chlorhydroxide is the base of most anti-perspirants and is an important material used by members of the Association. The Association's spokesman said the product was not manufactured in Canada, and to his knowledge was produced by only one company in the U.S.A., under a patent. (2) He requested that "the present treatment should continue as accorded under item 208t." (3)

He referred to previous submissions of the Association and indicated that the position of his group regarding aluminum chlorhydroxide was unchanged. At that time it was said:

"Any change in the present rates of duty ... could severely upset the long established balance within the market and increase our costs, with no compensatory gains in the Canadian chemical industry." (4)

(1) Transcript, Vol. 85, p. 12925

(2) Same, Vol. 168, p. 27732

(3) Same, Vol. 168, p. 27731

(4) Same, Vol. 87, p. 13217

No other representations were made to the Board respecting aluminum chlorhydroxide. It is understood that in the Brussels Tariff Nomenclature the product is referred to as aluminium hydroxychloride.

Copper Oxychloride

On November 21, 1962, a group of seven Canadian formulators of pesticides informed the Board of their interest in copper oxychloride, one of a number of raw materials used by member companies. The companies were:

A.H. Howard Chemical Company Limited
 Allied Chemical Services Limited
 Chipman Chemicals Limited
 Gallowhur Chemicals Canada Limited
 Manchester Products Limited
 Niagara Brand Chemicals
 Green Cross Products Division of Sherwin-Williams
 Company of Canada Limited

They recommended an end-use item which would allow free entry under both the B.P. and M.F.N. Tariffs for chemicals "when for use in the manufacture of goods described by heading 38.11 [of the B.T.N.] and when not made in Canada." When the chemicals are made in Canada, rates of 15 p.c., B.P. and 20 p.c., M.F.N. were proposed.⁽¹⁾

The companies did not indicate why rates of 15 p.c., B.P., 20 p.c., M.F.N. would be appropriate when this product is ruled to be made in Canada.

The Canadian Federation of Agriculture also expressed an interest in copper oxychloride as a constituent of pesticides. The Federation urged that chemicals used in the manufacture of pesticides be entered free of duty under all Tariffs.⁽²⁾ The Federation, in general submissions, urged that higher rates on chemicals so used would affect the costs of Canadian agricultural production, and affect the returns to farmers.

No statistics are available regarding this product. At the present time the product is entered under tariff item 208t at Free, B.P., 15 p.c., M.F.N. It may also be entered under end-use item 791, when for the manufacture of pesticides, free of duty under both the B.P. and M.F.N. Tariffs.

Bismuth Oxychloride; Cobalt Chloride; Cupric Chloride; Nickel Chloride

The Canadian Pharmaceutical Manufacturers Association named the above four chemicals in a list of less-important products used as raw materials by members of the Association. At a hearing in September 1962, the Association recommended that chemicals used in the manufacture of pharmaceuticals be dutiable at rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, until the products are made in

(1) Transcript, Vol. 108, p. 16332-3

(2) Same, Vol. 110, p. 16631

Canada. When they are made in Canada, the proposed rates were 15 p.c., B.P. and 20 p.c., M.F.N.⁽¹⁾ The spokesman for the Association did not indicate why rates of 15 p.c. and 20 p.c. would be suitable for these products when made in Canada.

No statistics are available regarding bismuth oxychloride. However, it was ruled made in Canada in February 1963, and is now entered under tariff item 711 at rates of 15 p.c., B.P. and 20 p.c., M.F.N.

Cobalt chloride was made in Canada in 1957 but there is no record of Canadian production after that year. The Canadian market for the product appears to be negligible.

Cupric chloride is not known to be made in Canada and imports appear to be small; in 1960, they apparently were valued at about \$7,000.

Nickel chloride is not known to be made in Canada. Imports were about \$70,000 annually in the three years, 1961-63, and have been greater than for some products for which specific representations were made.

Cuprous Chloride

Naugatuck Chemicals Division of Dominion Rubber Limited indicated an interest as a user of cuprous chloride. At a hearing in September 1960, the company spokesman said he took no issue with the rates that were being proposed by others "providing that the Board also recommends those rates which will be proposed ... for the products which we manufacture."⁽²⁾

Because no other representations were made for cuprous chloride, it would be subject to the Industry Committee's proposal of 15 p.c., B.P. and 20 p.c., M.F.N. The latest available information is for 1960 when imports of cuprous chloride apparently were valued at approximately \$3,000.

Stannic Chloride and Stannous Chloride

Stannic chloride is not known to be produced in Canada. Imports in 1960 appear to have had a value of less than \$1,000. This product and stannous chloride which follows are subject to the Industry Committee proposal of 15 p.c., B.P. and 20 p.c., M.F.N.

Imports of stannous chloride (tin dichloride, tin crystals) increased from about \$10,000 annually, at the time of the hearing, to more than \$23,000 in 1963. No Canadian production is known and no representations were made on the product.

⁽¹⁾ Transcript, Vol. 87, p. 13321

⁽²⁾ Same, Vol. 6, p. 899-900

Tariff Considerations

Some of the chlorides that were the subject of submissions by the toilet goods manufacturers, the pesticides manufacturers, the pharmaceutical manufacturers and Naugatuck Chemicals are entered under tariff item 208t at rates of Free, B.P. and 15 p.c., M.F.N.; stannic and stannous chloride are dutiable under tariff item 208l at rates of Free, B.P., 10 p.c., M.F.N.; bismuth oxychloride is made in Canada and is dutiable under tariff item 711 at rates of 15 p.c., B.P., 20 p.c., M.F.N. Some of the products are imported for use in the manufacture of pesticides, free of duty under tariff item 791. The pesticides manufacturers recommended free entry under both the B.P. and M.F.N. Tariffs, in an end-use item, for copper oxychloride while it was not made in Canada. The other proposals were that the existing rates of Free, B.P. and 15 p.c., M.F.N. remain, except that Naugatuck Chemicals took no exception to rates of 15 p.c., B.P. and 20 p.c., M.F.N., for cuprous chloride. The parties generally observed that any higher rates of duty would increase their costs and affect their competitive position in the market.

All of the submissions recommended that rates of 15 p.c., B.P. and 20 p.c., M.F.N. apply when the products were ruled to be produced in Canada. However, none of the parties indicated why these rates were specifically appropriate, though their submissions indicated that they were aware that the higher rates might affect their costs.

At the beginning of the hearing on chlorides and oxychlorides, on January 23, 1961, the spokesman for the Industry Committee said:

"The Committee believes that all commercially significant chemicals of Heading No. 28.30 are dealt with in briefs which the Board has received for this hearing. While some other products had previously been reported to the Committee, these apparently do not have sufficient commercial importance for any company to come forward at this time with proposals for duty treatment. In these circumstances, the Committee recommends that such other products be subject to the tariff provided for Heading No. 28.30 15 p.c., B.P. and 20 p.c., M.F.N." (1)

The statement by the Committee indicates that it expected these rates to apply to commercially insignificant products many of which were not produced in Canada. As noted, imports of nickel chloride and possibly others, such as aluminum chlorhydroxide, copper oxychloride and stannous chloride, exceed the market value of some products which were the subject of representations.

The Industry Committee, taking the view that these rates were generally appropriate, as a residual provision for chemicals, did not indicate why the rates were specifically suitable for products classified by B.T.N. heading 28.30.

CHLORITES AND HYPOCHLORITES - B.T.N. 28.31

Heading 28.31 of the Brussels Tariff Nomenclature includes two products, calcium hypochlorite and sodium hypochlorite, which are of economic importance, and others which are of minor or negligible importance. Calcium hypochlorite, lithium hypochlorite, sodium hypochlorite and sodium chlorite were the subject of representations to the Board; no representations were made to the Board related specifically to any other products classified by the heading.

CALCIUM HYPOCHLORITE

Calcium hypochlorite is a white, crystalline material. In a relatively pure form, it contains 70 per cent of available chlorine and is referred to by its chemical name; in its less pure forms it contains between 34 and 37 per cent of available chlorine and is commonly, though improperly, known as chloride of lime. Both forms are valued for their bleaching and disinfecting properties.

The principal uses of calcium hypochlorite, high strength grade, are in bleaching textiles and pulp and paper, in the production of chemicals and in sanitation. The low strength product is used mainly in rural sanitation and in the production of sodium hypochlorite solutions (Javel Water). Because the high strength product costs about five times as much as the other, it would not ordinarily be substituted for the lower strength.

Until 1949 calcium hypochlorite, low strength, was manufactured in Canada by Canadian Industries Limited. Since 1949 the product has not been commercially available from Canadian production and the Canadian market has been supplied by imports, originating almost entirely in the U.K., the U.S.A. and Japan. In 1964 imports from all countries were 2.8 million pounds, valued at \$551,000. In Canadian statistics, imports of calcium hypochlorite are recorded as chloride of lime.

Imports of Chloride of Lime (Calcium Hypochlorite),
by Principal Country of Origin, 1957-64

	<u>U.K.</u>	<u>U.S.A.</u>	<u>Japan</u>	<u>Total</u>	
	thousand pounds			'000 lb.	\$ '000
1957	1,837	744	40	2,632	212
1958	2,085	787	116	3,048	254
1959	1,668	939	107	2,726	282
1960	2,504	1,129	109	3,742	367
1961	717	1,069	392	2,179	334
1962	554	1,629(a)	304	2,487(a)	422
1963	582	1,715	247	2,544	477
1964	633	2,067	134	2,834	551

(a) Estimated

Source: D.B.S., Trade of Canada, Imports, s.c. 8316

At the hearing in 1961 it was said that the product imported from the U.K. was of the low strength, while the imports from the U.S.A. and Japan were of the high strength.(1) This view is generally supported by the available data.

Average Values of Chloride of Lime (Calcium Hypochlorite)
Imported from the U.K., the U.S.A. and Japan, 1957-64

	<u>Origin of Imports</u>		
	<u>U.K.</u>	<u>U.S.A.</u>	<u>Japan</u>
	cents per pound		
1957	3.9	18.3	12.4
1958	4.0	19.1	15.0
1959	4.0	21.3	13.4
1960	4.0	22.1	16.0
1961	4.2	22.3	16.9
1962	4.2	22.1	13.0
1963	4.4	23.9	16.6
1964	5.0	24.1	16.6

Source: Derived from D.B.S., Trade of Canada, Imports, s.c. 8316

Since 1961, the U.S.A. has replaced the U.K. as the principal supplier of calcium hypochlorite to the Canadian market. In 1964, the U.S.A. accounted for about 90 per cent of the total value of imports. Imports from the U.K. decreased from 2.5 million pounds in 1960 to about 600,000 pounds annually in the years, 1961-64.

The spokesman for Imperial Chemical Industries, of England, informed the Board that all imports from the U.K. were supplied by his company. He said about two thirds of these were for the production of Javel Water and one third, for general sanitation.(2) Of the total value of imports, however, it would appear that only one quarter to one third, in the years preceding 1961, was for the production of Javel Water, and two thirds to three quarters were for other purposes.

(1) Transcript, Vol. 22, p. 3177, 3185

(2) Same, Vol. 22, p. 3186

Value of Imports of Chloride of Lime (Calcium Hypochlorite) by
Country of Origin, 1957-64

	<u>U.K.</u>	<u>U.S.A.</u>	<u>Japan</u>	<u>Total</u>	Per Cent <u>U.K. of Total</u>
	- thousand dollars -				%
1957	71	136	5	212	33
1958	84	150	17	254	33
1959	67	200	14	282	24
1960	100	249	17	367	27
1961	30	238	66	334	9
1962	23	359	39	422	5
1963	25	411	41	477	5
1964	31	498	22	551	6

Source: D.B.S., Trade of Canada, Imports, s.c. 8316

Tariff Considerations

Calcium hypochlorite is entered under item 208a:

<u>Item 208a</u>	<u>British Preferential Tariff</u>	<u>Most- Favoured- Nation Tariff</u>
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Chloride of lime and hypochlorite of lime:

1. When in packages of not less than
twenty-five pounds weight each....
.....per one hundred pounds Free 15 cents
2. When in packages of less than
twenty-five pounds weight each.... 17½ p.c. 25 p.c.

The statistics relating to the dutiable value of imports and duty collected indicate that virtually all imports are entered into Canada under tariff item 208a1. The data indicate that the duty collected on imports from M.F.N. countries has been between one and five per cent of their dutiable value.

At the public hearing, in January 1961, Fyon & Fyon, Limited Montreal, Quebec, a large consumer, urged that the present rates of Free, B.P. and 15 cents per hundredweight, M.F.N., be retained.(1)

At the same hearing, Imperial Chemical Industries Limited (I.C.I.), London, England, proposed that the existing, specific, M.F.N. rate be converted into an ad valorem rate and that calcium hypochlorite containing not more than 40 per cent available chlorine

(1) Transcript, Vol. 22, p. 3176

be free of duty under the B.P. Tariff and dutiable at 5 p.c., under the M.F.N. Tariff. I.C.I. also urged that imports in the smaller packages (less than 25 pounds) should not be dutiable at lower rates.(1) The rates proposed by I.C.I. would apply until chloride of lime was manufactured in Canada. At that time I.C.I. would not object to rates of 15 p.c., B.P. and 20 p.c., M.F.N.

Javex Company Limited, at a later hearing, proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., for calcium hypochlorite.(2)

The only other interest in calcium hypochlorite made known to the Board was by the Canadian Pulp and Paper Association. Low strength calcium hypochlorite (bleaching powder or chloride of lime) was said to be used only by small mills; larger mills used elemental chlorine and "milk of lime" (calcium hydroxide) to prepare their own bleaching mixture. The Association's spokesman opposed any increase in rates in respect of chemicals used by the pulp and paper industry.(3)

The proposals of Fyon and Fyon and the Pulp and Paper Association would leave the existing item and rates unchanged.

The proposal of I.C.I. would introduce an additional item into the Customs Tariff, relating to calcium hypochlorite which contained not more than 40 per cent available chlorine. Presumably the existing items 208a(1) and 208a(2) would continue to relate to the higher strength product of more than 40 per cent available chlorine. The recommended M.F.N. rate would actually involve a small increase in duty because on the low strength product the M.F.N. duty of 15 cents per 100 pounds is equivalent to an ad valorem rate of only three to four per cent.

The proposal of Javex would involve a substantial increase in the existing rates. The ad valorem equivalent of the duty collected on imports from Japan has been between one and five per cent; on imports from the U.S.A. it has varied between two and five per cent. In the recommendation of Javex Limited the rates would be 15 p.c., B.P. and 20 p.c., M.F.N. At prices published in the U.S.A. in mid-1965 the M.F.N. duty under the Javex proposal, would be increased from 15 cents to \$7.90 per 100 pounds.

The Fyon and Fyon spokesman said his company has been producing Javel Water for 63 years and that during this time calcium hypochlorite had been a basic ingredient of the process. He added,

"Since the imposition of higher tariffs would serve only to increase the company's ever increasing costs, we recommend that the tariff on calcium hypochlorite be retained at its present rate of 0% B.P. and 15 cents per 100 pounds M.F.N."(4)

(1) Transcript, Vol. 22, p. 3186-7

(2) Same, Vol. 73, p. 11071

(3) Same, Vol. 85, p. 13012

(4) Same, Vol. 22, p. 3176

The company reported that calcium hypochlorite constituted about two thirds of its cost of the raw materials used in producing Javel Water.

It should be noted that the import data suggest that calcium hypochlorite is no longer being used, at least to any large extent, as a raw material for the production of Javel Water. It would appear that Fyon and Fyon have been using a different process since 1961.

The spokesman for I.C.I. indicated that his proposal was "not intended to make any change of substance in the existing rates of duty..." He continued, saying:

"I.C.I. suggests that the imposition of [higher] duty rates...would merely result in an increase in the price of this useful material to the Canadian consumer."(1)

Javex Limited was concerned mainly with products which might be competitive with the various bleaching compounds which the company produces and sells. The available information indicates that the company was more concerned with potential competition from sodium hypochlorite than from calcium hypochlorite. (Sodium hypochlorite is discussed immediately below.) The spokesman for Javex summarized his company's position as follows:

"we have here a variety of trade named products made from a variety of admittedly different chemicals...They have the same function and the products as manufactured from them are directly competitive in marketing to the housewife. As such...we feel that the ingredients entering into these products should have the same tariff treatment to avoid giving the product of one process a competitive advantage over the end product which employs another of the chemicals in a different process that leads up to the same end result...it is our submission that the treatment on all of these should be the rates...which we have recommended for sodium hypochlorite, 15 p.c., B.P. and 20 p.c., M.F.N."(2)

The Canadian Pulp and Paper Association took the position that increases in rates of duty for chemicals used by its members would be reflected in increased costs of production. The Association said it marketed its products in highly competitive domestic and export markets and that increased costs would adversely affect the ability of its members to compete in these markets.

SODIUM HYPOCHLORITE

The Product

Sodium hypochlorite is available commercially as a solution whose maximum content of available chlorine is about 16 per cent. The

(1) Transcript, Vol. 22, p. 3187

(2) Same, Vol. 73, p. 11083-4

product is usually produced by the reaction of sodium hydroxide (caustic soda) with chlorine. It is also produced by the reaction of calcium hypochlorite with soda ash (sodium carbonate). Because the available chlorine declines during storage, particularly in the higher concentrations, sales of concentrations of 12 per cent or more are exclusively to industrial users who consume the product soon after delivery. The bulk of the consumption of sodium hypochlorite is in retail packages with concentrations varying from $1\frac{1}{2}$ per cent to 7 per cent available chlorine. In these concentrations the product is frequently known as Javel Water.

The companies which produce sodium hypochlorite in solution usually purchase caustic soda and chlorine. However, many companies which sell Javel Water, are essentially packagers. They frequently purchase sodium hypochlorite in the higher concentration (about 15 per cent available chlorine), dilute it and package it for resale at the retail level. Because even the concentrated solution contains a large percentage of water, sodium hypochlorite is an expensive product to ship and many of the largest consumers of the product, for example pulp and paper plants, do not purchase sodium hypochlorite, as such, but purchase liquid chlorine and caustic soda and produce the product on site.

In Canada, sodium hypochlorite is produced and sold in the higher concentrations by some of the chlorine-caustic soda manufacturers, for example Canadian Industries Limited at Cornwall, Ontario and Standard Chemical Limited at Beauharnois, Quebec. The product may be used directly by industrial or institutional users or it may be diluted and packaged for the retail trade. In addition there are several plants which make the product from purchased chlorine and caustic soda and package it in the lower concentrations for retail sale. One company, Fyon & Fyon, at Montreal, produced sodium hypochlorite from calcium hypochlorite until recently.

The Market

The Canadian market consumes large quantities of sodium hypochlorite, mainly for household use. In 1962, the value of plant shipments was more than \$12 million. The value of shipments has more than doubled since 1953.

In Canada the product is sold nationally by one company, Javex Company Limited. It is also sold locally by several others; some, like the Javex company, manufacture the product, and some are essentially packagers. Javex operates six plants, which are located at Moncton, Montreal, Toronto, Winnipeg, Edmonton and Vancouver and is by far the largest producer and seller of sodium hypochlorite in Canada.

The Javex spokesman said that sales for industrial use are a small percentage of the total.⁽¹⁾ The principal industrial uses were said to be in commercial laundering, bleaching shellac and textiles, shrink-proofing woollens and in a variety of other bleaching and disinfecting applications.⁽²⁾

⁽¹⁾ Transcript, Vol. 22, p. 3285

⁽²⁾ Same, Vol. 22, p. 3248

The bulk of the sales of Javel Water are to householders, through the ordinary channels of trade from the manufacturer to the retailer. In homes, the product is used in laundering, cleaning and disinfecting. For home use sodium hypochlorite is sold in either glass or plastic containers of a variety of sizes.

The Javex company sells its product to wholesalers on a delivered basis, within designated geographic zones. For example, in 1961, in most of Ontario and Quebec the area south of the main C.P.R. line constituted one zone within which the delivered price to wholesale distributors was the same. Ontario and Quebec north of the main C.P.R. line, the Gaspé area and the Maritime Provinces constituted another such zone.

The spokesman for Javex said that this policy involved charging more in areas close to the plant than if the product were sold f.o.b. plant, and charging less than the equivalent f.o.b. price plus freight in more distant areas. He noted that the cost of freight to the Maritimes was about 45 cents per case but that only about 20 to 25 cents per case was actually added to the basic price at Montreal.(1)

The Extent and Nature of Foreign Competition

The Javex spokesman said that he believed imports of sodium hypochlorite were small. Information available to the Board supports this view. In each of the six years 1956-62, the value of sodium hypochlorite imported into Canada was less than one per cent of the value of shipments by Canadian plants.

The high cost of freight was said to be an important factor in excluding imports. Freight cost was also cited as a factor encouraging competition. In this connection the Javex spokesman said:

"Freight on our finished product...has prevented concentrating production at one or two central points. Freight paid by us exceeds 15 per cent of our manufacturing cost. This freight factor provides us with an element of protection in those areas close to our plants; it works against us in those areas of Canada which are closer to United States producing points.."(2)

The Javex Company cited Tacoma, Washington; Denver, Colorado; St. Paul, Minnesota; Detroit, Michigan; Toledo, Ohio; Buffalo and Rochester, New York, and two places in the New England states, as locations whence competition from U.S.A. producers originated. The sodium hypochlorite being shipped from these locations would be either an approximately 15 per cent available chlorine solution for packaging, or an even more dilute solution, seven per cent or less in glass or plastic retail packages. In either case the costs of freight from most of these points to their nearest Canadian markets would be high because of the large amounts of water that have to be transported relative to the content of sodium hypochlorite. Moreover, in the case of retail packages, freight would also be incurred for the weight of

(1) Transcript, Vol. 22, p. 3276-7

(2) Same, Vol. 22, p. 3250-1

the container and other packaging materials. Tacoma, Detroit and Buffalo are most likely to be competitive locations. Each of these cities is near a source of the principal raw materials, chlorine and caustic soda, and each is close to major Canadian market areas. The competition from these plants would occur principally in the Vancouver, Windsor and Niagara Falls-Hamilton areas.

Canadian manufacturers in Vancouver can obtain chlorine and caustic soda in Vancouver as cheaply as plants in Tacoma (see heading 28.01 dealing with chlorine and caustic soda). In southwestern Ontario, Canadian producers or packagers at Welland, Hamilton and Toronto would incur higher freight charges than a Buffalo plant, on their purchases of chlorine and caustic soda or sodium hypochlorite concentrate, but would avoid the much greater expense of shipping dilute solutions of sodium hypochlorite in retail packages. In the Windsor area, the Dow Chemical plant at Sarnia is a nearby source of chlorine and caustic soda. However, the base prices of chlorine and caustic soda are lower in Detroit than at Sarnia. The Windsor area would appear to be the most exposed to competition from the U.S.A. in the absence of any import duties. With the M.F.N. Tariff of 20 p.c., domestic producers have enjoyed virtually the entire Canadian market.

In most parts of Canada, economic considerations, therefore, seem to give Canadian producers and packagers considerable advantage over competitors in the U.S.A. However, the Javex Company drew the Board's attention to a special circumstance related to the fact that most sodium hypochlorite is sold as Javel Water, bleach or disinfectant, under brand names.

Its spokesman referred to the problem as follows:

"It is, however, in the field of distribution that there are special problems affecting us. The marketing of a consumer product to the housewife, through grocery stores, calls for massive advertising support. Advertising costs in Canada are high. Further, the overflow of United States advertising into Canada is great, and calls for unusually large expenditures to combat its effect."⁽¹⁾

Some United States publications have a substantial circulation in Canada; a manufacturer in the U.S.A. advertising his product in one of these would simultaneously reach many thousands of Canadian consumers at only a marginal cost, because his main target would be consumers in the U.S.A. However, it is doubtful whether such "overflow" advertising, of itself, could be sufficient to capture any substantial part of the Canadian market. A U.S. producer who hoped to become established in Canada would very probably need to advertise through Canadian media, and to incur the same costs as Canadian distributors. Moreover, there is only one nationally available brand in the U.S.A., "Clorox". Except for the manufacturer of this brand, producers in the U.S.A. would be unlikely to advertise their products, at very high cost, in national magazines, when their interest was in publicizing their brands in only those parts of the country which they serve.

⁽¹⁾ Transcript, Vol. 22, p. 3251

Tariff Considerations

On January 24, 1961, the Supreme Court of Canada confirmed the decision of the Tariff Board that sodium hypochlorite in solution that had been before the Board in Appeal No. 398 was correctly classified as a disinfectant under item 219a, which provides for free entry under the B.P. and M.F.N. Tariffs if in packages exceeding three pounds gross weight and for rates of Free, B.P. and 12½ p.c., M.F.N. when in smaller packages. Sodium hypochlorite not in solution is entered under tariff item 711 at rates of 15 p.c., B.P., 20 p.c., M.F.N.

On July 3, 1961, temporary item 210i came into effect. This item specified "sodium hypochlorite in solution" with rates of 15 p.c., B.P. and 20 p.c., M.F.N., the rates at which, for a time, the product had been entered under item 711. The decision of the Supreme Court was rendered while the public hearing under Reference 120 on sodium hypochlorite was in progress. Item 210i did not come into effect until several months later and, therefore, was not the subject of discussion when the product was before the Board.

At the public hearing, Javex Company Limited proposed that sodium hypochlorite be dutiable at rates of 15 p.c., B.P. and 20 p.c., M.F.N., in an item worded like B.T.N. heading 28.31.(1) These rate proposals were supported by Standard Chemical Company Limited(2) and Fyon & Fyon Limited.(3) Javex repeated its proposal at the hearing in November 1962 when pesticidal preparations were being considered under B.T.N. heading 38.11.

The Canadian Pulp and Paper Association notified the Board of its interest in sodium hypochlorite as a bleach used by its members. The Association strongly opposed any increase in the tariff rates, respecting chemicals used by that industry.(4)

Naugatuck Chemicals Division of Dominion Rubber Limited expressed an interest in the product, at an earlier hearing, in September, 1960. Its spokesman said that the company "take no issue with the rates which are being proposed...providing that the Board also recommends those rates which will be proposed to you for the products which we manufacture."(5)

The spokesman for Javex supported the company's proposal in the following terms:

"As emphasized in this submission, the problems of the Javex Company Limited in relation to competition are in this distribution marketing area.

"Now we are not saying that there has been any great volume of imports; you will find no such statement anywhere in the

(1) Transcript, Vol. 22, p. 3248; Vol. 73, p. 11071; Vol. 109, p. 16548

(2) Same, Vol. 22, p. 3196

(3) Same, Vol. 22, p. 3239

(4) Same, Vol. 36, p. 5246; Vol. 85, p. 13005

(5) Same, Vol. 6, p. 899-900

submission. The Javex Company has done a very good job; it has beaten the Americans in the Canadian market; it has merchandized aggressively and it has kept the imports out...

"We are referring, however, to the pressure from the United States and the need to maintain the duties which have been in effect — at least administratively 15 p.c., B.P. and 20 p.c., M.F.N. — until now to enable the company to continue to develop and to prosper, as it has done." (1)

The company spokesman also referred to higher costs of raw materials and containers in Canada, the effect of "overflow" advertising from the U.S.A., and the vulnerability of border areas to competition from producers in the U.S.A.

It is difficult to compare costs of raw materials because in some locations Javex would be able to purchase chlorine and caustic soda at lower delivered costs than potentially competitive producers in the U.S.A. and at other locations the costs would be higher. Moreover, chlorine is purchased in essentially a 100 per cent concentration and caustic soda is usually obtained as a 50 per cent solution, or, less frequently, as a 73 per cent solution. On the other hand, sodium hypochlorite in the concentrations sold at retail is a very dilute solution, a large part of whose weight is water. The relatively small differences in costs that may exist for the principal raw materials would be of less importance than other factors and would not always be to the disadvantage of Canadian producers.

From the discussion at the hearing it appears that the threat of imports from the U.S.A. occurs in only a few areas near the Canada-U.S.A. border. To some extent the vulnerability of these areas may be occasioned by the pricing policy of the company. In maintaining uniform delivered prices within fairly large market areas the company must charge more than the price f.o.b. plant plus freight at some locations in order to average delivery costs within an area.

The protection afforded by freight charges, however, is considerable in most of the major market areas. The discussion of this factor in the section dealing with chlorine and caustic soda indicates that Canadian chlorine-caustic soda producers have an advantage over U.S. competitors at most consuming locations. The much greater dilution in which sodium hypochlorite is shipped and the additional weight of retail packages involved would enhance these advantages to a considerable degree.

The high cost of transportation has given rise to a striking similarity in the organization of the industry in Canada and in the U.S.A. In each country there is only one company which produces on a national scale and in each there are large numbers of local brands manufactured for distribution within local market areas. Furthermore, even the national producers forego some economies of scale because of the overriding importance of freight charges.

Javex informed the Board that location of a sodium hypochlorite plant was determined by taking into account both distance from suppliers and, more importantly, distance from the market for the finished product. Its spokesman said that charges on outbound freight on the finished product was about three and one-half times the cost of inbound freight on the raw materials.(1)

He also said:

"Plant location is...to some extent dictated by location of raw material suppliers. Freight on our finished product has, however, been an even greater factor, and has prevented concentrating production at one or two central points."(2)

The effect of "overflow" advertising from the U.S.A. would appear to be a factor of relatively minor importance. The fact that there is only one national brand in the U.S.A. would tend to minimize the competition which might arise out of this. Moreover, the advertising by the Javex Company has apparently been very successful in establishing that brand name in the minds of Canadian consumers. The spokesman for Javex said:

"a trade name is something of great value,...they [Javex Company Limited] have a trade name which has been so widely accepted as to almost become a generic term itself over a large part of Canada."(3)

At the hearing in November 1962, the spokesman for Javex said that when sodium hypochlorite is put up in retail packages, as is most of the company's output, it might be classified under heading 38.11 of the B.T.N., as a packaged disinfectant. The spokesman for the Industry Committee stated that such a problem of classification appears to have arisen in some countries which use the B.T.N. He informed the Board that for example, in the U.K., heading 38.11 is divided into two categories, one of which relates to unmixed products put up in forms or packings for sale at retail. The chemicals in this category bear the same rates as they do under their relevant B.T.N. heading, when not packed for sale at retail. The second category under 38.11 applies to "other".(4)

OTHER CHLORITES AND HYPOCHLORITES

At the public hearing, in September 1962, the Canadian Pulp and Paper Association informed the Board that its members used sodium chlorite chiefly as a slimicide, but also as a bleach. The Association was opposed to any increase in the rates of duty for the chemicals used by its members.(5)

(1) Transcript, Vol. 22, p. 3275

(2) Same, Vol. 22, p. 3250

(3) Same, Vol. 22, p. 3282

(4) Same, Vol. 109, p. 16548 and following

(5) Same, Vol. 85, p. 13006

The Canadian Federation of Agriculture listed sodium chlorite as a chemical used in herbicides. In its submission the Federation indicated that the product was entered free of duty, under both the B.P. and M.F.N. Tariffs, under end-use item 791 and urged that end-use treatment for chemicals of importance to agriculture be continued with free entry under all Tariffs.⁽¹⁾

Sodium chlorite is not known to be made in Canada. Imports, which had been valued at around \$50,000 annually in the mid-fifties, have risen sharply and in 1963 had a value of \$185,000. It is now entered under tariff item 208t at rates of Free, B.P. and 15 p.c., M.F.N. If used as a material for pesticides, it may be entered free of duty under tariff item 791.

Javex Company Limited proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., for all bleaching chemicals which the company deemed to be competitive with products which it manufactured.⁽²⁾ Lithium hypochlorite was one of the chemicals to which Javex made specific reference. It is now entered under tariff item 208t, with rates of Free, B.P., and 15 p.c., M.F.N.

No other representations were made to the Board relating specifically to products of heading 28.31.

At the hearing in January 1961, the spokesman for the Industry Committee said:

"The Committee believes that all commercially significant products of Heading No. 28.31 are dealt with in briefs which the Board has received for this hearing. While sodium chlorite has previously been reported, it does not appear to have sufficient importance for the reporting company to come forward at this time with proposals for duty treatment.

"In these circumstances, the Committee recommends that it and unreported products of the classification be subject to the tariff provided for Heading No. 28.31 15 p.c., B.P. and 20 p.c., M.F.N.⁽³⁾

The Industry Committee did not indicate why rates of 15 p.c., B.P. and 20 p.c., M.F.N., would be appropriate specifically for sodium chlorite or any other chlorite or hypochlorite. Its general position was that products whose economic importance was small or negligible, or on whose behalf no other submission had been made for any other reason, should be dutiable at the rates recommended.

(1) Transcript, Vol. 110, p. 16632

(2) Same, Vol. 73, p. 11072

(3) Same, Vol. 22, p. 3172

CHLORATES AND PERCHLORATES - B.T.N. 28.32

The products classified by heading 28.32 of the Brussels Tariff Nomenclature are the metallic salts of chloric acid and of perchloric acid. At the public hearing in January 1961, representations were received by the Board on potassium chlorate and sodium chlorate, which were stated to be the only two products of commercial importance under this heading.⁽¹⁾ The Industry Committee recommended that all of the other chlorates and perchlorates be dutiable at rates of 15 p.c., B.P. and 20 p.c., M.F.N. in an item worded like B.T.N. heading 28.32.

POTASSIUM CHLORATE

The Product and the Market

Potassium chlorate is a white crystalline material which is soluble in water and which acts as a powerful oxidizing agent. It is manufactured by the electrolysis of a solution of potassium chloride and is produced in two grades, powder and crystal, identical in chemical analysis but differing in physical form. The powder is used in manufacturing matches; the crystals are used in the manufacture of pyrotechnics and pharmaceuticals. Potassium chlorate is also used in textile printing and dyeing. There were said to be no substitutes for the chemical in matches but other products can be substituted in dyeing although at higher cost.

The sole Canadian producer of potassium chlorate is the Electric Reduction Company of Canada Limited (Erco) which produces both grades at its plant at Buckingham, Quebec.

At the public hearing the company spokesmen said that approximately 10 per cent of the Canadian market is supplied by imports. This suggests a market for more than one million pounds of potassium chlorate, valued at about \$150,000. Canadian consumption was said to have been relatively stable over a period of several years.

The Erco spokesman stated that at least 90 per cent of Canadian consumption of potassium chlorate is for the manufacture of matches. The available data support this estimate. With the exception of the fairly small requirements of a match manufacturing plant at Mission, B.C., the Canadian market is entirely in Ontario and Quebec.

Imports of potassium chlorate between 1958 and 1963 have varied from 47,000 to 116,000 pounds, valued at \$6,000 to \$21,000. Except for very occasional small importations from other countries, all imports have been from the U.S.A. and Switzerland. Although France, Italy and East Germany, among others, were said by the Erco spokesman to be potentially competitive, these countries had not been a factor in supplying the Canadian market up to the time of the hearing and have not exported to Canada since the hearing. Most imports were said to be for use by manufacturers of matches, particularly in Quebec. Erco indicated that there have been exports to Turkey and South America.⁽²⁾

(1) Transcript, Vol. 23, p. 3304

(2) Same, Vol. 23, p. 3312

Imports of Potassium Chlorate by Country of Origin,
Selected Years, 1953-63

	<u>U.S.A.</u> '000 lb.	<u>Switzerland</u> '000 lb.	<u>Total</u> '000 lb. \$'000	
1953	52	46	98	13.2
1955	43	66	132	18.7
1957	32	109	143	19.3
1959	20	66	87	12.6
1961	57	44	101	15.7
1962	71	45	116	21.0
1963	*	25	47	5.8

Source: D.B.S., Trade of Canada, Imports, s.c. 8329

Prices of match grade, powdered potassium chlorate have been stable and unchanged for some years both in Canada and the U.S.A. In 1963, in drums, in carload lots, f.o.b. works, the price was \$12.75 per hundredweight in the U.S.A. or \$13.75 per 100 pounds, expressed in Canadian funds. The price of the Canadian product was said to be designed to obtain for it as large a share as possible of the Canadian market.

Producers in the U.S.A. were said to be located at Niagara Falls, New York, Anderson, Nevada and Portland, Oregon. The British Columbia market is supplied by the Canadian producer under a contract to supply all plants of a match manufacturer who also operates plants at Pembroke, Ontario, and Berthierville, Quebec. Erco would appear to have a freight-cost advantage, relative to producers in the U.S.A., in supplying most of the major consumers of the chemical. All imports in recent years have been entered in Ontario and Quebec.

Tariff Considerations

Potassium chlorate is entered under tariff items 208t or 209d, free of duty under the British Preferential Tariff and dutiable at 15 p.c. under the Most-Favoured-Nation Tariff. If not further prepared than ground, it comes under tariff item 209d "Potash, chlorate of, not further prepared than ground"; if further processed, it would be classified under item 208t because it has not been ruled by the Department of National Revenue to be of a kind produced in Canada. Occasional duty-free imports which are reported from M.F.N. countries are probably entered under some end-use item such as 791.

The only submission relating specifically to this product was by Erco, which proposed that rates of 15 p.c., B.P., and 20 p.c., M.F.N., should be applicable to potassium chlorate.⁽¹⁾ Although no specific classification proposal was made, it was apparently intended that these rates should apply to an item worded like B.T.N. heading 28.32.

⁽¹⁾ Transcript, Vol. 23, p. 3305

In a general submission on products of concern to the company, the Consolidated Mining and Smelting Company of Canada Limited (Cominco) indicated an interest in potassium chlorate. In its submission, Cominco stated that it was opposed to any recommendations which were likely to cause retaliatory increases in duties by countries to which Canadian products are exported or to cause increases in costs of production in Canada. (1)

The principal argument advanced by Erco in support of the proposed increase of 5 p.c. in the M.F.N. rate of duty was that this might increase by one-half cent per pound the delivered cost of European potassium chlorate in Canada, and thus tend to limit its importation and therefore increase the company's share of the Canadian market. The proposed increase from free entry to 15 p.c. under the B.P. Tariff was said to be in fear of "British ingenuity."

At the time of the hearing Erco claimed to be supplying about 90 per cent of the Canadian market. Switzerland and the U.S.A. were the only other sources of supply. The Erco spokesman said that the product was not produced in the U.K. or any other Commonwealth country; there would appear, therefore, to be no reason for the additional protection requested under the B.P. Tariff. If the increase from 15 p.c. to 20 p.c. in the M.F.N. rate resulted in a complete displacement of imports from Europe by Erco's production, it would increase the company's sales in Canada by \$3,000 to \$7,000 annually. If the increase in the M.F.N. rate resulted in displacement of all imports, it would, in the five years 1959-63, have increased Erco's sales, on average, by only \$13,000 a year. It is doubtful if an increase of 5 percentage points would be sufficient to induce all Canadian consumers to purchase from the one domestic source of supply.

SODIUM CHLORATE

The Product and the Industry

Sodium chlorate, a white crystalline material, is a powerful oxidizing agent. It is produced by the electrolysis of a strong, purified sodium chloride solution, with subsequent crystallization, filtration and drying. Its principal uses are in bleaching processes of the pulp and paper industry, in refining uranium and in the manufacture of herbicides.

Until 1957 the only producer in Canada was the plant of the Electric Reduction Company of Canada Limited (Erco), at Buckingham, Quebec. In 1957, Erco began operation of a second plant at Vancouver, British Columbia, which was said to have a productive capacity several thousand tons less than the plant at Buckingham. The company claimed to be one of the world's largest producers of sodium chlorate. A second company, Standard Chemicals Limited, began production at Beauharnois, Quebec, in 1959, and a third, Dryden Chemicals Limited, in 1961, at Dryden, Ontario. Trade sources indicated that a fourth company, Huron Chemicals Limited of Toronto, Ontario, would begin production about mid-1964 at Marathon, Ontario. In 1965, it was reported that, by mid-1966, Erco would expand its Vancouver plant by 50 per cent, to an annual capacity of 36,000 tons.

(1) Transcript, Vol. 5, p. 715 and following

Erco stated that the combined capacity of its two plants was 50,000 tons annually in 1961. Standard Chemicals' capacity in 1961 was said to be for 7,500 tons and the company spokesman indicated that it intended to increase this to 10,000 tons annually by late 1962. The actual installed capacity at Dryden is not known but both this establishment and the one planned at Marathon are much smaller than the plant of Standard Chemicals. In 1963, as in previous years, Erco was by far the largest producer and seller of sodium chlorate in Canada. The output of the Dryden and Marathon plants was intended to be mainly for captive use by the pulp and paper companies with which the plants are associated.

The Market

In 1963, about 40,000 tons of sodium chlorate valued at about six million dollars were used in Canada. About 90 per cent of the total was consumed in the manufacture of wood pulp; most of the remainder was for refining metals and for chemical production. In the late 1950's, when uranium mining was at its peak, about 75 per cent of Canadian consumption was used for refining uranium ore. The sharply reduced production of uranium was reflected in the declining use of sodium chlorate by this industry.

In the pulp and paper industry, sodium chlorate is used to generate chlorine dioxide for bleaching the pulp used in the manufacture of high quality papers. The only other significant use is in the manufacture of herbicides. In 1962 about 590 tons were used for various chemical products, including herbicides.

Consumption of Sodium Chlorate, by Industry,
1960-63

	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>
		- tons -		
Miscellaneous Chemicals	473	375	591	..
The Minerals Industry	7,318	..	..	..
Pulp and Paper	26,000	29,000	35,705	35,700

Source: D.B.S., various publications

The use of sodium chlorate for bleaching pulp has expanded very rapidly. In 1951, only 800 tons were used for this purpose; in 1959, consumption for this purpose was 17,000 tons and in 1963 it was 36,000 tons. This rapid expansion is expected to continue. The establishment of production facilities at Dryden and Marathon, Ontario, suggests further growth; moreover, new pulp and paper plants are apparently being designed to use sodium chlorate in bleaching processes.

Foreign Trade

Imports of sodium chlorate were negligible until 1959; in 1959 about 2,200 tons were imported, most of it from France. Although about 85 per cent of the imports in 1959 were entered free of duty, the Restrictive Trade Practices Commission (in RTPC 41, p. 23-4) reports that a large part was sold to pulp and paper plants. No imports have been recorded since 1959.

Erco reported the exportation of relatively small amounts of sodium chlorate during the early 1950's⁽¹⁾ and again in 1959 and 1960. Standard Chemicals informed the Board that it exported between 10 and 12 per cent of its output to the U.S.A.⁽²⁾ United States import statistics record increasing imports from Canada, which by 1963, had reached about 1,600 tons and in 1964, approximately 1,500 tons. However, relative to domestic use these were small, less than five per cent of Canadian consumption.

Both the Erco and Standard Chemicals spokesmen agreed that about 80 per cent of the sodium chlorate that was consumed in Canada would qualify for drawback of duty, if imported. The Erco spokesman drew the Board's attention to the fact that dumping duties, if imposed, would also be entitled to drawback.⁽³⁾ Following a complaint by Erco of dumping, an investigation by the Department of National Revenue did not reveal evidence to support the complaint.⁽⁴⁾

Pricing Policy and Prices

Sodium chlorate is sold both in Canada and in the U.S.A., f.o.b. works, freight equalized. An exception to this, in Canada, was for sales to uranium producers. Because of that industry's concentration near Elliott Lake, Ontario, Erco established a warehouse nearby and sales to uranium producers were on a delivered price basis. Bulk shipments are in specially constructed tank cars, hopper cars and tank trucks. The product is also sold in drums.

In Canada, sodium chlorate, in carload lots, has been priced at 7.5 cents a pound, for the bulk product and 9.3 cents a pound, in drums, f.o.b. works, since 1959. The comparable price in the U.S.A., in drums, was 9.0 cents a pound (U.S. funds) until 1964. In 1964 the price rose to 10 cents a pound. In both countries prices are slightly higher for sales by plants west of the Rocky Mountains.

Tariff Considerations

Sodium chlorate is entered under tariff item 210, Free, B.P. and 12½ p.c., M.F.N. It is also entered under end-use item 791, free of duty under both the B.P. and M.F.N. Tariffs. These items are re-produced on the following page.

(1) Transcript, Vol. 23, p. 3347

(2) Same, Vol. 23, p. 3359

(3) Same, Vol. 23, p. 3335

(4) Same, Vol. 23, p. 3350

	<u>British Preferential Tariff</u>	<u>Most- Favoured- Nation Tariff</u>
210 (in part)...chlorate, bisulphite and stannate of soda.....	Free	12½ p.c.
791 Materials of all kinds for use in producing or manufacturing prepara- tions provided for in tariff items 209b and 219a under such regulations as the Minister may prescribe.....	Free	Free

Both Erco and Standard Chemicals proposed that sodium chlorate should continue to be free of duty under the B.P. Tariff and dutiable at 12½ p.c. under the M.F.N. Tariff, the existing rates under tariff item 210.⁽¹⁾

The Canadian Pulp and Paper Association opposed any increases in the duties applicable to sodium chlorate,⁽²⁾ as did the Consolidated Mining and Smelting Company of Canada Limited.⁽³⁾

The Canadian Federation of Agriculture proposed that chemicals used in the manufacture of pesticides should be entered free of duty. The Federation listed sodium chlorate as such a product.⁽⁴⁾

The spokesmen for both Erco and Standard Chemicals stated that the protection now afforded them is "diluted" by the drawback provision of the Customs Tariff as well as by end-use items. They said that they require the present M.F.N. rate to protect their large capital investment in plants, distribution facilities and research, technical and engineering services. They stated that the existing rate had not obviated the need to reduce prices to meet French competition after the opening of the St. Lawrence Seaway.

The companies' spokesmen said that in the production of sodium chlorate fixed costs are high and profitability is dependent on operation of plants near capacity. It was also said that marginal production was relatively cheap and that profitability increased rapidly as output exceeded 85 per cent of productive capacity. This was cited as a reason why producers in other countries seeking to achieve such levels of output might sell in Canada at prices designed to obtain this business at the expense of the Canadian manufacturers. They also claimed that the existing drawback arrangements nullify the protection afforded by the anti-dumping provisions of the Customs Tariff Act.

Although the various competitive threats cited in support of the rate proposals may be valid, no evidence was submitted to the Board

(1) Transcript, Vol. 23, p. 3326, 3357

(2) Same, Vol. 85, p. 13006

(3) Same, Vol. 5, p. 712 and following

(4) Same, Vol. 110, p. 16631

to indicate that the prices charged by the Canadian producers in order to meet foreign competition were unprofitable. At the public hearing the Erco spokesman said

"the company...is one of the world's largest producers [of sodium chlorate]

"Under these conditions, disadvantages due to small-scale plants do not apply. Our plants are as modern and, we believe, as efficient as those of other large producers. Economies we have been able to make due to larger-scale production and improved efficiencies have enabled us to keep selling price increases to a minimum."(1)

Standard Chemicals cited the Lakehead as one area where competition from abroad had led to price reductions. However, since the hearing two pulp and paper companies in this general area have acquired captive production facilities, indicating that freight costs probably had been substantial. Except for a few "exposed" areas, the location of the Erco and Standard Chemicals plants in relation to pulp and paper plants should give the Canadian producers a substantial freight-cost advantage to most major consuming locations.

The available data indicate that the Canadian market has been expanding rapidly and the outlook is for further expansion. At the same time there appear to have been no imports since 1960 and exports to the U.S.A. have been increasing in recent years. The larger Canadian market has been supplied entirely by domestic producers. Since the hearing, early in 1961, new plants have been erected at Dryden and Marathon, Ontario and, as noted above, Erco has announced an increase of 50 per cent in the capacity of its Vancouver plant.

OTHER PRODUCTS OF HEADING 28.32

A number of other chlorates and also various perchlorates would be classified by an item worded like B.T.N. heading 28.32. No submissions were made to the Board concerning any of these, nor was any indication given that any of them are of economic significance in Canada. The Industry Committee, consistent with its other, similar proposals, recommended that these other products should be dutiable at rates of 15 p.c., B.P. and 20 p.c., M.F.N., under an item worded like heading 28.32 of the B.T.N. "chlorates and perchlorates". No reasons were given why these or any other rates were appropriate particularly for the products concerned.

Perchlorate of ammonia, when imported by manufacturers of explosives for use exclusively in the manufacture of such articles in their own factories, is specifically provided for under tariff item 758, free of duty under the B.P. and M.F.N. Tariffs. It is understood that this provision is essentially inactive.

(1) Transcript, Vol. 23, p. 3326-7

BROMIDES, OXYBROMIDES, BROMATES AND PERBROMATES,
AND HYPOBROMITES - B.T.N. 28.33

The products classified by heading 28.33 of the Brussels Tariff Nomenclature are numerous, but most are of little economic importance. The available information indicates that the following are fairly significant: potassium bromide, sodium bromate and sodium bromide. However, the data are incomplete and others may also be of significance. None of the chemicals of heading 28.33 are known to be made in Canada.

At the public hearing, on February 6, 1961, the spokesman for Dow Chemical Canada Limited said Dow Chemical produced a large number of these chemicals at Midland, Michigan and that the Canadian company sold them in Canada. He referred to potassium bromate, potassium bromide and sodium bromate as being the only ones that were of substantial economic significance. He estimated Dow's total sales of all chemicals of the group, in Canada, at about \$200,000 annually, and that sales in Canada of each of the three important chemicals were less than \$50,000 annually.

Sodium bromate appears to be commercially the most important. The value of imports was between \$65,000 and \$90,000 annually, in the five years 1959-63. The principal use of the product seems to be in the toilet preparations industry. The spokesman for Dow Chemical said the product was used in the manufacture of hair-waving preparations and for refining gold. The available data show the U.K., the Netherlands and the U.S.A. as the countries of origin, but do not indicate the relative importance of each of these countries as suppliers of the Canadian market. The spokesman for Dow Chemical suggested that the U.S.A. is the principal source of supply.

Imports of sodium bromide have been increasing, but vary greatly from year to year. In 1963, they were more than 100,000 pounds, valued at slightly more than \$36,000. The U.K. is the major supplier in most years, with the U.S.A. the only other country of origin. The principal use of the chemical is in the manufacture of pharmaceutical products. In most recent years, the pharmaceutical industry accounted for between two-thirds and three-quarters of the imports. Sodium bromide is used in photographic materials and is a raw material for the production of other bromides.

The data relating to other chemicals of B.T.N. heading 28.33 are few and intermittent. Potassium bromide imports were valued at approximately \$33,000 in 1960 but no later data are available. Potassium bromide is used largely in photographic paper emulsions and pharmaceuticals.

Although potassium bromate was cited as being one of the more significant chemicals of the group, the available import data indicate that imports do not occur in every year, and that they vary widely and do not approach \$10,000 in annual value.

Tariff Considerations

All the chemicals of B.T.N. heading 28.33, that are known to be imported, are entered under item 208t at Free, B.P. and 15 p.c., M.F.N., though it is possible that the duty-free provision for "crude bromides" under tariff item 208w2 might apply to some products which would be classified by this heading.

At the public hearing, the spokesman for Dow Chemical Canada Limited said:

"We would not recommend that these products be given exceptional treatment at lower rates than the heading 15 p.c., B.P. and 20 p.c., M.F.N.⁷ ... If, however, other interested parties or users feel there is a justification for a lower rate, we would not object.

"... if lower rates are recommended by the Board for these chemicals not produced in Canada it would seem advisable that some uniform rates should be established so as to avoid discrimination between companies with competitive chemicals."⁽¹⁾

Up to the time of the public hearing on February 6, 1961, no formal proposals had been received by the Board except for the "Compilation of Tariff Rate Proposals For Chemical Substances Under Tariff Reference-120", which was prepared by the Industry Committee and widely circulated. In this compilation the rates proposed for several products of heading 28.33 were Free, B.P. and 15 p.c., M.F.N., unchanged from those under item 208t. The individual products shown in the "Compilation" were:

ammonium bromide	potassium bromide
cadmium bromide	sodium bromate
calcium bromide	sodium bromide
copper bromide	strontium bromide
potassium bromate	zinc bromide

The list includes all of the chemicals of the group known to be of any economic importance, as well as others for which no data are available.

This compilation also showed the Industry Committee's rate proposal for all other products of the group to be 15 p.c., B.P. and 20 p.c., M.F.N.

The Dow Chemical spokesman prefaced his statement at the hearing, saying:

"My company did not submit a brief on this heading 28.33 and we did not propose to do so, but in the absence of others I have some information, if the Board wishes it."⁽²⁾

⁽¹⁾ Transcript, Vol. 24, p. 3466

⁽²⁾ Same, Vol. 24, p. 3464

The statement which followed included the proposal that rates of 15 p.c., B.P. and 20 p.c., M.F.N. be applied to the list of products for which the Industry Committee compilation showed proposed rates unchanged from those under tariff item 208t. The Dow Chemical proposal was intended to apply to the products shown above as contained in the Industry Committee's "Compilation" except that magnesium bromide appeared instead of copper bromide. It should be noted that the company's proposal for higher rates was made in the course of the hearing; other interested parties, who might have taken exception, therefore, had no notice of the proposal.

The spokesman for Dow Chemical gave no reason for the proposed increase in rates. The rates proposed would decrease the margin of preference from 15 p.c. to 5 p.c. The reduced margin might affect particularly sodium bromide, a large proportion of which is imported from the U.K.

The spokesman for the Industry Committee was questioned why rates of 15 p.c., B.P. and 20 p.c., M.F.N. were proposed for products not made in Canada and which were thought to be of little or negligible economic significance. He replied:

"we have recommended the scheme whereby these products, if they do become significant in the future, request can be made for a lower duty rate if it is required. At the present time, if these materials are ruled at the heading rate 15 p.c., B.P. and 20 p.c., M.F.N., we feel ... that there is a greater opportunity for Canadians to make this material in the future than there would be if it was ruled at a lower rate."(1)

No commercial deposits of bromine chemicals are known to exist in Canada, and the size of the market for most of the products of heading 28.33 is so small that it is doubtful whether any of them will be manufactured in Canada for at least several years.

At the present time, Canadian consumers who use these products are importing them under tariff item 208t at Free, B.P. and 15 p.c., M.F.N. If the proposals of the Industry Committee and Dow Chemical were implemented, they would become dutiable at 15 p.c., B.P. and 20 p.c., M.F.N.

Many of the chemicals of the heading were said to be valued at between 36 cents and two dollars a pound. The proposed increase in the rates would therefore add substantially to the cost of Canadian consumers of the products. However, the increase would not appear to benefit any Canadian producer nor be likely to encourage production in Canada because of the small domestic market and the absence of basic raw materials. Most of the products are used in the production of photographic materials, pharmaceuticals and toiletries. The proposal, as noted above, would reduce the margin of preference.

At a later hearing, in September, 1962, the Canadian Pharmaceutical Manufacturers Association proposed that chemicals not made in Canada and which were used in the manufacture of pharmaceuticals should

(1) Transcript, Vol. 24, p. 3469

be entered free of duty under the B.P. Tariff and at 15 p.c., under the M.F.N. Tariff unless otherwise provided for.⁽¹⁾ The Association listed ammonium bromide, lithium bromide, potassium bromide, sodium bromide and strontium bromide, as products which its members used as materials in the production of pharmaceuticals.

No other representations were made regarding the chemicals of B.T.N. heading 28.33.

(1) Transcript, Vol. 87, p. 13321

IODIDES, OXYIODIDES, IODATES AND PERIODATES - B.T.N. 28.34

Of the many chemicals that are classified by heading 28.34 of the Brussels Tariff Nomenclature only two, calcium iodate and potassium iodide, were the subject of briefs presented to the Board. Six others were the subject of various expressions of interest: ammonium iodide, bismuth iodide, calcium iodide, potassium iodate, sodium iodide and titanium tetraiodide. All other products classified by the heading were the subject of general proposals.

CALCIUM IODATE AND POTASSIUM IODIDECalcium Iodate

Calcium iodate is an insoluble salt whose principal use is in supplying iodine in animal nutrition. This chemical has replaced potassium iodide and potassium iodate which had been used previously for this purpose. Calcium iodate is a much more stable chemical than the other two and therefore is preferred for this application.

At the time of the public hearing, February 1961, Mallinckrodt Chemical Works Limited was the only producer of the product in Canada. At the hearing, McArthur Chemical Company Limited informed the Board that it expected to begin production of the chemical in a short time. Mallinckrodt began to manufacture the chemical in 1958 but achieved full-scale production only at the beginning of 1960.⁽¹⁾

The market for calcium iodate has been expanding since the mid-fifties. In 1959, the year before Mallinckrodt began regular production, imports were valued at \$65,000. In 1960, imports declined to \$35,000 and none appears to have been imported since 1960. This suggests that the domestic market is being supplied almost entirely by Canadian production.

Calcium iodate is sold in Canada, f.o.b. Toronto and Montreal. Prices are not published but at the time of the hearing were said to be \$1.55 to \$1.60 per pound. Because of the relatively high unit value, freight costs are not a significant part of the cost to the purchaser. The spokesman for Mallinckrodt said that freight from Montreal to Vancouver would amount to only about five cents a pound, roughly three per cent of the price at plant. In the U.S.A., the chemical is priced on a delivered basis.

Potassium Iodide

Potassium iodide is a white crystalline substance with a wide variety of uses. It is produced in Canada by Mallinckrodt and possibly by the McArthur Chemical Company Limited. Iodine was said to constitute about 80 per cent of the raw material costs.

The product is available in a wide range of purities and other specifications for particular applications. Its principal uses

(1) Transcript, Vol. 24, p. 3489

were said to be in the preparation of photographic emulsions, as a feed additive and as an analytical reagent in chemistry. It is also used in pharmaceuticals and in various industrial applications.

At the public hearing, the spokesman for Mallinckrodt said that imports were a relatively minor part of the Canadian supply, possibly five to ten per cent of Canadian use, indicating a total market in Canada ranging between \$45,000 and \$90,000 per year. Most of the market was said to be in Ontario and Quebec.

Prices of potassium iodide are not published, but the Mallinckrodt spokesman said the price current at the time of the hearing was \$1.90 per pound, in 500 pound lots, for the U.S.P. grade. He described the company's pricing policy as follows:

"I would say it would be equivalent to U.S. price plus duty, freight, brokerage and possibly 2 or 3 cents for nuisance value. By 'nuisance value' I mean the trouble of going through and finding a United States Supplier and arranging to bring goods in."(1)

Tariff Considerations

Calcium iodate and potassium iodide are entered under tariff item 711 at rates of 15 p.c., B.P. and 20 p.c., M.F.N. Calcium iodate was ruled made in Canada early in 1961; before that it had been entered mainly under end-use item 219h, free of duty under both the B.P. and M.F.N. Tariffs, when imported for use in the manufacture of animal and poultry feeds, and to a much lesser degree under item 208t, Free, B.P. and 15 p.c., M.F.N. Tariff item 219h is not within Reference 120.

At the public hearing in February 1961, Mallinckrodt Chemical Works Limited proposed that both products be dutiable at 15 p.c., B.P. and 20 p.c., M.F.N.(2) These rate proposals were supported by the McArthur Chemical Company Limited. The latter company supported the use of the Brussels Tariff Nomenclature.(3)

The Canadian Pharmaceutical Manufacturers Association listed potassium iodide as one of the more important chemicals used by its members. The effect of its recommendation would be to support the rates proposed by Mallinckrodt, 15 p.c., B.P. and 20 p.c., M.F.N.(4)

The Canadian Federation of Agriculture proposed "duty-free entry to all chemicals, antibiotics and vitamins entering into the manufacture of livestock feeds or used for farm and veterinary purposes."(5) The Federation listed calcium iodate and potassium iodide as feed additives.

The Canadian Feed Manufacturers Association also proposed duty-free entry under the B.P. and M.F.N. Tariffs for all chemicals

(1) Transcript, Vol. 24, p. 3482

(2) Same, Vol. 24, p. 3473

(3) Same, Vol. 24, p. 3497

(4) Same, Vol. 87, p. 13321

(5) Same, Vol. 86, p. 13033

for use in the manufacture of livestock and poultry feed.⁽¹⁾ The Association listed calcium iodate and potassium iodide as chemicals to which this proposal would apply.

Thus, there were, in effect, two recommendations made to the Board for calcium iodate and potassium iodide. The first, proposed by the manufacturer and supported by McArthur Chemical and the Pharmaceutical Manufacturers Association, was for rates of 15 p.c., B.P. and 20 p.c., M.F.N. under an item worded like heading 28.34 of the B.T.N. The second was for the creation of a new item providing for free entry under the B.P. and M.F.N. Tariffs for all chemicals used in the manufacture of livestock and poultry feeds. This was the view of the Canadian Federation of Agriculture and the Canadian Feed Manufacturers Association.

In support of the company's proposed rates, the spokesman for Mallinckrodt said:

"Continuation of the level of duty specified by Item 711 is recommended on the grounds that it has been sufficient to maintain Canadian production against world competition, and at the same time is not so high as to bar imported goods from the domestic market. There has been a dynamic balance between imports and domestic goods with neither able to dominate the market."⁽²⁾

He explained his reference to "dynamic balance" as "Another way of putting it might be this, that we can't put our prices low enough to keep out all imports; importers can't put their prices low enough to run us out of business."⁽³⁾

He also referred to cost advantages of larger producers in the U.S.A. and added:

"We regard our present ability to participate in a duty-free market to be of questionable duration...we do not relish the prospect of competing indefinitely on a duty-free basis with foreign concerns whose markets and technical resources dwarf our own."⁽⁴⁾

Until Mallinckrodt entered into the production of calcium iodate, the company acted as a sales agent for its parent in the U.S.A. Therefore, the decision to begin manufacture in Canada could be expected to be of some advantage to the company. Although the company spokesman said it could not continue to operate in a duty-free market, he also said the company intended "to leave our prices where they are and go after the larger market which we now trust is open to us."⁽⁵⁾ Apparently this policy has been successful in eliminating imports of the product after 1960.

(1) Transcript, Vol. 77, p. 11808

(2) Same, Vol. 24, p. 3475

(3) Same, Vol. 24, p. 3484

(4) Same, Vol. 24, p. 3489

(5) Same, Vol. 24, p. 3490

For potassium iodide, the pricing policy was said to be quite different; to the U.S. price was added the full amount of the 20 p.c. duty, freight, brokerage and two or three cents per pound for "nuisance value". This policy, nevertheless, apparently was successful in retaining 90 to 95 per cent of the Canadian market for the company and suggests that the company's location in Canada gives it an advantage over competitors in the U.S.A. This advantage would appear to be mainly responsible for the "dynamic balance" to which the company spokesman referred.

OTHER PRODUCTS OF HEADING 28.34

Polymer Corporation Limited informed the Board of its interest in titanium tetraiodide. Polymer requested continuation of end-use item 851 under which the company imported chemicals free of duty under both the B.P. and M.F.N. Tariffs.⁽¹⁾

The Canadian Pharmaceutical Manufacturers Association expressed an interest in calcium iodide, ammonium iodide, bismuth iodide and sodium iodide. Except for calcium iodide, these products were of minor importance to its members. The Association recommended rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for chemicals, not made in Canada, used in the manufacture of pharmaceutical products. When ruled as made in Canada, chemicals would be dutiable at 15 p.c., B.P. and 20 p.c., M.F.N.⁽²⁾ Sodium iodide is ruled made in Canada, dutiable under item 711 at rates of 15 p.c., B.P., 20 p.c., M.F.N.

The Canadian Feed Manufacturers Association also referred to sodium iodide as a chemical used by its members. The Feed Manufacturers proposed an end-use item with free entry under all Tariffs for chemicals used in the preparation of livestock and poultry feeds.⁽³⁾

The Industry Committee recommended rates of 15 p.c., B.P. and 20 p.c., M.F.N. for all products of heading 28.34 for which no other proposals were made to the Board.⁽⁴⁾ Because most chemicals of this heading appear to be entered under tariff item 208t at rates of Free, B.P. and 15 p.c., M.F.N., this proposal, if implemented, would result in a substantial increase in the B.P. rate, a smaller increase in the M.F.N. rate and a substantial reduction in the margin of preference. The spokesman for the Committee did not indicate why these rates would be appropriate for products not made in Canada, the commercial importance of which was probably very small.

McArthur Chemical supported the rate proposals of the Industry Committee.⁽⁵⁾ At the time of the hearing, the company was preparing to begin production of some of the chemicals of heading 28.34. It did not indicate why such a level of protection would be required.

(1) Transcript, Vol. 89, p. 13587

(2) Same, Vol. 87, p. 13321

(3) Same, Vol. 77, p. 11808

(4) Same, Vol. 24, p. 3471

(5) Same, Vol. 24, p. 3497

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Table 1

Imports: Barium, peroxide of, non-alcoholic, for the manufacture of
peroxide of hydrogen, s.c. 8372(a)

Tariff Items 208t and 711

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Value</u>
				(000)		
	<u>1. Total</u>					
1953	6	1	.23	1	206	15.0
1954	-	-	-	-	-	-
1955	5	1	.23	1	168	15.0
1956	-	-	-	-	-	-
1957	-	-	-	-	-	-
	<u>2. United States</u>					
1953	6	1	.23	1	206	15.0
1954	-	-	-	-	-	-
1955	5	1	.23	1	168	15.0
1956	-	-	-	-	-	-
1957	-	-	-	-	-	-

(a) Beginning in 1958 included in s.c. 8415

Table 2

Imports: Magnesite, dead-burned, sintered, caustic calcined or plastic magnesia, s.c. 7262 (a)

Tariff Item 296b(1)

Year	Total Imports		Unit	Dutiable	Duty	Duty as
	lb.	\$	Value	Value	Collected	p.c. of
	(000)	(000)	\$/lb.	\$	\$	Dutiable
				(000)		Value
<u>1. Total</u>						
1953	13,602	398	.03	396	59,398	15.0
1954	12,231	406	.03	406	60,885	15.0
1955	27,875	854	.03	854	128,120	15.0
1956	48,120	1,590	.03	1,590	238,504	15.0
<u>2. United Kingdom</u>						
1953	181	8	.05	8	1,264	15.0
1954	105	10	.09	10	1,475	15.0
1955	89	7	.08	7	1,104	15.0
1956	265	12	.04	12	1,764	15.0
<u>3. United States</u>						
1953	13,422	390	.03	388	58,134	15.0
1954	7,089	263	.04	263	39,453	15.0
1955	12,698	488	.04	488	73,269	15.0
1956	13,014	727	.06	727	109,084	15.0
<u>4. Yugoslavia</u>						
1953	-	-	-	-	-	-
1954	5,000	132	.03	132	19,779	15.0
1955	15,029	356	.02	356	53,407	15.0
1956	30,267	731	.02	731	109,672	15.0

(a) Beginning in 1957 s.c. 7262 was divided into class 7274 - Magnesite, dead-burned or sintered and class 7275 - Magnesite, caustic calcined or plastic

Table 3

Imports: Magnesite, dead-burned or sintered, s.c. 7274(a)

Tariff Item 296b(1)

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1957	20,317	715	.04	715	107,220	15.0
1958	27,941	1,064	.04	1,064	159,536	15.0
1959	35,283	1,334	.04	1,334	200,713	15.1
1960	48,357	1,740	.04	1,739	261,282	15.0
1961	43,887	1,708	.04	1,704	255,676	15.0
1962	49,706	1,916	.04	1,916	287,528	15.0
1963 ^(b)	32,695	1,207	.04	1,207	170,505	14.1
1964 ^(b)	55,509	1,918	.03	1,914	240,455	12.6
<u>2. United Kingdom</u>						
1957	45	5	.11	5	765	15.0
1958	143	5	.04	5	774	15.0
1959	7	*	.05	*	49	15.0
1960	420	17	.04	17	2,599	15.0
1961	44	3	.06	3	403	15.0
1962	7,258	241	.03	241	36,189	15.0
1963	691	33	.05	33	4,928	15.0
1964	9	*	.04	*	56	14.9

Table 3
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>3. United States</u>						
1957	10,407	447	.04	447	67,037	15.0
1958	13,980	689	.05	689	103,317	15.0
1959	28,611	1,172	.04	1,172	176,522	15.1
1960	36,875	1,423	.04	1,423	213,766	15.0
1961	34,909	1,456	.04	1,452	217,816	15.0
1962	33,923	1,396	.04	1,396	209,446	15.0
1963	22,894	870	.04	870	119,894	13.8
1964	39,198	1,441	.04	1,437	192,723	13.4
<u>4. Yugoslavia</u>						
1957	9,866	263	.03	263	39,418	15.0
1958	13,818	369	.03	369	55,416	15.0
1959	6,612	159	.02	159	23,894	15.0
1960	11,062	299	.03	299	44,917	15.0
1961	8,809	245	.03	245	36,757	15.0
1962	4,460	132	.03	132	19,827	15.0
1963	4,409	129	.03	129	19,350	15.0
1964	13,190	364	.03	364	38,991	10.7

(a) Prior to 1957 s.c. 7274 was included in s.c. 7262; beginning in 1964 renumbered as s.c. 472-78

(b) Includes imports under tariff item 296k beginning in November 1963

Table 4

Imports: Magnesia, caustic calcined or plastic, s.c. 7275 (a)

Tariff Item 296b(1)

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	lb.	\$	\$/lb.	\$	\$	
	(000)	(000)		(000)		
<u>1. Total</u>						
1957	3,104	130	.04	130	19,475	15.0
1958	2,753	118	.04	118	17,701	15.0
1959	4,943	171	.03	171	25,680	15.0
1960	5,701	202	.04	198	29,730	15.0
1961	5,673	195	.03	195	29,189	15.0
1962	5,427	212	.04	212	31,894	15.1
1963	4,589	197	.04	194	29,144	15.0
<u>2. United Kingdom</u>						
1957	41	4	.09	4	530	15.0
1958	48	2	.03	2	227	15.0
1959	-	*	-	-	-	-
1960	4	*	.06	*	38	15.1
1961	-	-	-	-	-	-
1962	-	-	-	-	-	-
1963	36	3	.07	3	389	14.7
<u>3. United States</u>						
1957	2,986	124	.04	124	18,526	15.0
1958	2,612	111	.04	111	16,678	15.0
1959	4,837	166	.03	166	24,832	15.0
1960	5,672	200	.04	196	29,397	15.0
1961	5,447	186	.03	185	27,822	15.0
1962	5,162	204	.04	204	30,654	15.1
1963	4,384	187	.04	184	27,545	15.0
<u>4. Netherlands</u>						
1957	66	2	.03	2	301	15.0
1958	22	1	.03	1	107	14.9
1959	35	1	.03	1	156	15.0
1960	-	-	-	-	-	-
1961	31	1	.03	1	135	15.0
1962	216	7	.03	7	982	15.0
1963	121	4	.03	4	558	15.0

(a) Prior to 1957 s.c. 7275 was included in s.c. 7262; beginning in 1964 included in s.c. 472-79

Table 5

Imports: Magnesium carbonate, basic or otherwise, excepting crude rock, n.o.p., s.c. 8374(a)

Tariff Items 296b(2) and 296c

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	637	48	.08	48	9,622	20.0
1954	739	52	.07	52	10,324	20.0
1955	798	59	.07	59	11,765	20.0
1956	958	71	.07	71	14,105	20.0
1957	676	49	.07	49	9,770	20.0
1958 ^(b)	722	53	.07	53	10,629	20.0
1959	607	51	.08	48	9,550	20.0
1960	787	66	.08	62	12,356	20.0
1961	772	67	.09	65	13,033	19.9
1962	707	67	.10	66	13,017	19.8
1963	472	49	.10	46	9,372	20.2
<u>2. United Kingdom</u>						
1953	607	45	.07	45	8,972	20.0
1954	713	50	.07	49	9,844	20.0
1955	719	52	.07	52	10,479	20.0
1956	929	68	.07	68	13,502	20.0
1957	599	42	.07	42	8,336	20.0
1958	605	42	.07	42	8,440	20.0
1959	323	24	.08	21	4,256	20.0
1960	484	38	.08	33	6,607	20.0
1961	433	35	.08	34	6,856	20.0
1962	421	39	.09	37	7,343	19.7
1963	309	31	.10	28	5,712	20.3

Table 5
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>3. United States</u>						
1953	30	3	.11	3	650	20.0
1954	26	2	.09	2	480	20.0
1955	78	6	.08	6	1,286	20.0
1956	29	3	.10	3	603	20.0
1957	77	7	.09	7	1,434	20.0
1958	117	11	.10	11	2,189	20.0
1959	283	26	.09	26	5,294	20.0
1960	303	29	.09	29	5,749	20.0
1961	340	31	.09	31	6,177	19.9
1962	286	28	.10	28	5,674	19.9
1963	163	18	.11	18	3,660	20.0

(a) Beginning in 1964 included in s.c. 404-99, "Metallic salts and peroxy salts of inorganic acids, n.e.s."

(b) Beginning January 1, 1958 includes former s.c. 7260

Table 6

Imports: Magnesium carbonate, not further manufactured than ground,
for the manufacture of rubber products, s.c. 7260^(a)

Tariff Item 296c

Year	Total Imports		Unit	Dutiable	Duty	Duty as
	lb.	\$	Value	Value	Collected	p.c. of
	(000)	(000)	\$/cwt.	\$	\$	Dutiable
				(000)		Value
<u>1. Total</u>						
1953	5	1	10.96	*	9	20.5
1954	1	*	19.30	*	39	20.2
1955	1	*	15.08	*	39	19.9
1956	9	1	8.52	*	25	19.7
1957	14	1	8.04	*	27	20.3
<u>2. United Kingdom</u>						
1953	5	*	10.72	-	-	-
1954	-	-	-	-	-	-
1955	-	-	-	-	-	-
1956	8	1	7.96	-	-	-
1957	13	1	7.63	-	-	-
<u>3. United States</u>						
1953	*	*	14.67	*	9	20.5
1954	1	*	19.30	*	39	20.2
1955	1	*	15.08	*	39	19.9
1956	1	*	12.70	*	25	19.7
1957	1	*	13.30	*	27	20.3

^(a) Discontinued in 1958, subsequent imports included in s.c. 8374

Table 7

Imports: Magnesium oxide and magnesium carbonate, not further manufactured than ground, for the manufacture of insulating materials, s.c. 7261.

Tariff Item 296e

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Value</u>
				(000)		
<u>1. Total</u>						
1953	11,967	548	.05	-	-	-
1954	11,315	483	.04	-	-	-
1955	10,195	475	.05	-	-	-
1956	11,785	568	.05	-	-	-
1957	4,215	170	.04	-	-	-
1958	2,717	127	.05	-	-	-
1959	4,197	222	.05	-	-	-
1960	1,952	95	.05	-	-	-
1961	1,623	79	.05	-	-	-
1962	1,040	60	.06	13	1,912	15.0
1963	1,053	154	.15	3	479	15.0

2. United Kingdom

1953	-	-	-	-	-	-
1954	87	6	.07	-	-	-
1955	205	15	.08	-	-	-
1956	407	31	.08	-	-	-
1957	341	25	.07	-	-	-
1958	319	21	.07	-	-	-
1959	394	27	.07	-	-	-
1960	60	4	.06	-	-	-
1961	-	-	-	-	-	-
1962	-	-	-	-	-	-
1963	-	-	-	-	-	-

Table 7
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Dutiable</u>
				(000)		<u>Value</u>
<u>3. United States</u>						
1953	11,967	548	.05	-	-	-
1954	11,228	477	.04	-	-	-
1955	9,990	459	.05	-	-	-
1956	11,378	537	.05	-	-	-
1957	3,875	146	.04	-	-	-
1958	2,398	106	.04	-	-	-
1959	3,803	195	.05	-	-	-
1960	1,892	91	.05	-	-	-
1961	1,623	79	.05	-	-	-
1962	1,040	60	.06	13	1,912	15.0
1963	1,053	154	.15	3	479	15.0

(a) Beginning in 1964 included in s.c. 402-17

Table 8

Imports: Magnesium oxide, s.c. 402-17(a)

Tariff Items 208t and 296e

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Dutiable</u>
				(000)		<u>Value</u>
<u>1. Total</u>						
1964	7,252	618	.09	297	44,891	15.1
<u>2. United Kingdom</u>						
1964	190	44	.23	4	699	18.2
<u>3. United States</u>						
1964	7,063	574	.08	293	44,192	15.1

(a) Prior to 1964 included in s.c. 7261 and 8375

Table 9

Imports: Zinc white oxide, s.c. 8193 (a)

Tariff Item 242

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	<u>Value</u>
<u>1. Total</u>						
1953	2,764	344	.12	222	27,711	12.5
1954	2,069	262	.13	224	28,021	12.5
1955	1,611	209	.13	183	22,905	12.5
1956	1,258	175	.14	166	20,755	12.5
1957	1,435	197	.14	186	23,290	12.5
1958	1,391	186	.13	166	20,753	12.5
1959	1,447	184	.13	144	18,128	12.6
1960	1,518	201	.13	177	22,165	12.5
1961	4,477	455	.10	190	23,831	12.5
1962	5,472	577	.11	199	25,030	12.6
1963	4,463	458	.10	236	30,175	12.8
1964	2,341	273	.12	202	25,451	12.6
<u>2. United Kingdom</u>						
1953	1,115	122	.11	-	-	-
1954	356	38	.11	-	-	-
1955	237	26	.11	-	-	-
1956	65	8	.12	-	-	-
1957	95	10	.11	-	-	-
1958	205	19	.09	-	-	-
1959	396	39	.10	-	-	-
1960	212	24	.12	-	-	-
1961	2,890	264	.09	-	-	-
1962	3,965	375	.09	-	-	-
1963	2,426	206	.09	-	-	-
1964	799	69	.09	-	-	-

Table 9
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	Duty as p.c. of Dutiable Value
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	
<u>3. United States</u>						
1953	1,649	222	.13	222	27,711	12.5
1954	1,713	224	.13	224	28,021	12.5
1955	1,374	183	.13	183	22,905	12.5
1956	1,193	167	.14	166	20,755	12.5
1957	1,340	186	.14	186	23,290	12.5
1958	1,186	167	.14	166	20,753	12.5
1959	1,051	145	.14	144	18,128	12.5
1960	1,232	169	.14	169	21,225	12.5
1961	1,216	152	.12	151	18,928	12.5
1962	1,500	201	.13	198	24,972	12.6
1963	1,393	190	.14	190	24,305	12.8
1964	1,349	186	.14	184	23,209	12.6

(a) Beginning in 1964 renumbered as s.c. 402-21

Table 10

Imports: Alumina and Bauxite, n.o.p., s.c. 6001(a)

Tariff Items 211 and 329

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>
	lb.	\$	\$/cwt.
	(000)	(000)	
<u>1. Total</u>			
1953	603	115	19.09
1954	13,360	337	2.52
1955	399,623	3,742	.94
1956	441,011	4,548	1.03
1957	541,247	6,135	1.13
1958	301,538	3,476	1.15
1959	370,999	4,613	1.24
1960	437,025	5,512	1.26
1961	355,521	5,029	1.41
1962	443,218	6,452	1.46
1963	369,165	5,696	1.54
<u>2. United Kingdom</u>			
1953	24	3	13.49
1954	80	5	6.60
1955	269	9	3.27
1956	36	5	14.05
1957	41	6	14.44
1958	17	3	15.14
1959	46	5	10.50
1960	18	3	16.58
1961	66	4	6.42
1962	17	3	17.26
1963	15	3	18.51
<u>3. United States</u>			
1953	579	112	19.32
1954	6,111	276	4.51
1955	91,982	1,231	1.34
1956	71,581	1,224	1.71
1957	53,846	1,499	2.78
1958	20,946	716	3.42
1959	27,440	1,135	4.14
1960	30,868	1,176	3.81
1961	29,143	1,782	6.11
1962	29,870	1,859	6.22
1963	21,486	1,573	7.32

Table 10
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>
	<u>lb.</u> (000)	<u>\$</u> (000)	<u>\$/cwt.</u>
<u>4. Surinam</u>			
1954	7,168	56	.78
1955	154,707	1,213	.78
1956	178,819	1,430	.80
1957	216,480	1,822	.84
1958	119,259	1,021	.86
1959	174,228	1,672	.96
1960	264,553	2,806	1.06
1961	179,201	1,681	.94
1962	262,966	2,718	1.03
1963	227,928	2,575	1.13
<u>5. British Guiana</u>			
1955	152,665	1,289	.84
1956	190,575	1,889	.99
1957	270,876	2,807	1.04
1958	161,316	1,737	1.08
1959	169,285	1,801	1.06
1960	141,348	1,516	1.07
1961	146,932	1,552	1.06
1962	150,272	1,868	1.24
1963	119,680	1,542	1.29

(a) Prior to 1955 class entitled "Alumina n.o.p."; beginning in 1964 included in s.c. 252-10 and 252-30

Table 11

Imports: Bauxite and alumina for the production of aluminum,
s.c. 6002(a)

Tariff Items 211 and 329

Year	Total Imports		Unit Value
	lb. (000)	\$ (000)	\$/cwt.
<u>1. Total</u>			
1953	5,376,931	16,584	.31
1954	5,910,839	20,064	.34
1955	5,784,188	21,473	.37
1956	4,738,263	24,635	.52
1957	4,538,973	38,831	.86
1958	4,332,992	30,284	.70
1959	4,143,996	31,345	.76
1960	5,528,710	39,529	.71
1961	4,427,103	52,775	1.19
1962	4,025,145	55,525	1.38
1963	4,038,800	61,211	1.52
<u>2. United States</u>			
1953	135,316	1,619	1.20
1954	102,312	1,054	1.03
1955	183	4	2.33
1956	32	5	15.93
1957	128,416	4,376	3.41
1958	5	1	17.22
1959	2	*	4.50
1960	-	-	-
1961	218,255	7,165	3.28
1962	285,573	10,068	3.53
1963	272,613	9,431	3.46
<u>3. British Guiana</u>			
1953	4,072,318	10,783	.26
1954	4,281,282	10,685	.25
1955	3,662,022	8,180	.22
1956	2,803,188	7,453	.27
1957	2,222,028	6,146	.28
1958	2,800,150	7,623	.27
1959	2,506,788	6,929	.28
1960	3,227,648	8,199	.25
1961	2,007,779	11,011	.55
1962	2,366,190	13,385	.57
1963	1,483,363	12,359	.83

Table 11
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>
	<u>lb.</u> (000)	<u>\$</u> (000)	<u>\$/cwt.</u>
<u>4. Surinam</u>			
1953	219,159	1,334	.61
1954	565,461	2,735	.48
1955	901,327	2,422	.27
1956	914,121	2,426	.27
1957	743,431	2,075	.28
1958	431,680	1,249	.29
1959	410,340	1,190	.29
1960	436,263	1,243	.28
1961	553,741	1,642	.30
1962	372,125	1,274	.34
1963	1,102,393	3,413	.31
<u>5. Jamaica</u>			
1953	-	-	-
1954	111,866	3,054	2.73
1955	254,463	7,067	2.78
1956	357,257	11,879	3.33
1957	727,893	23,313	3.20
1958	583,636	18,506	3.17
1959	602,102	19,072	3.17
1960	836,365	26,500	3.17
1961	874,349	27,785	3.18
1962	951,686	29,813	3.13
1963	1,075,087	33,431	3.11

(a) Beginning in 1964 included in s.c. 252-10 and 252-30

Table 12

Imports: Alumina, s.c. 252-30^(a)

Tariff Item 211

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/cwt.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1964	1,741,948	55,686	3.20	1	177	19.9
<u>2. United Kingdom</u>						
1964	24	5	19.72	-	-	-
<u>3. United States</u>						
1964	386,244	14,360	3.72	1	177	19.9
<u>4. France</u>						
1964	60	10	16.87	-	-	-
<u>5. Republic of South Africa</u>						
1964	80	4	5.23	-	-	-
<u>6. Guinea</u>						
1964	47,135	1,463	3.10	-	-	-
<u>7. British Guiana</u>						
1964	335,805	9,876	2.94	-	-	-
<u>7. Jamaica</u>						
1964	972,601	29,968	3.08	-	-	-

^(a) Prior to 1964 included in s.c. 6001 and 6002

Table 13

Imports: Acid, chromic, s.c., 8026(a)

Tariff Items 216, ex 216 and 711

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$ (000)	
<u>1. Total</u>						
1953	900	225	.25	137	20,525	15.0
1954	842	209	.25	141	21,181	15.0
1955	1,183	302	.26	196	29,415	15.0
1956	1,035	281	.27	234	35,257	15.0
1957	1,152	308	.27	238	35,756	15.0
1958	852	231	.27	150	22,541	15.0
1959	1,143	308	.27	201	30,253	15.1
1960	1,127	306	.27	188	28,184	15.0
1961	1,304	364	.28	221	33,059	14.9
1962	1,578	472	.30	311	46,873	15.1
1963	1,761	532	.30	338	50,420	14.9
1964	2,005	611	.30	374	55,977	15.0
<u>2. United Kingdom</u>						
1953	311	76	.24	-	-	-
1954	211	50	.24	-	-	-
1955	186	44	.24	-	-	-
1956	27	7	.27	-	-	-
1957	127	34	.26	-	-	-
1958	233	61	.26	-	-	-
1959	196	52	.26	-	-	-
1960	249	69	.28	-	-	-
1961	283	78	.28	-	-	-
1962	333	99	.30	-	-	-
1963	360	116	.32	-	-	-
1964	476	155	.32	-	-	-

Table 13
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	
				(000)		
<u>3. United States</u>						
1953	444	117	.26	105	15,781	15.0
1954	522	135	.26	116	17,449	15.0
1955	940	224	.24	182	27,314	15.0
1956	961	261	.27	221	33,301	15.0
1957	1,015	272	.27	236	35,424	15.0
1958	610	167	.27	148	22,173	15.0
1959	939	254	.27	198	29,890	15.1
1960	848	229	.27	179	26,940	15.0
1961	987	276	.28	211	31,541	14.9
1962	1,169	352	.30	298	44,968	15.1
1963	1,276	385	.30	334	49,828	14.9
1964	1,385	419	.30	365	54,666	15.0
<u>4. Germany, Fed. Rep. of</u>						
1953	145	32	.22	32	4,744	15.0
1954	109	25	.23	25	3,732	15.0
1955	56	14	.25	14	2,063	15.0
1956	47	13	.28	13	1,956	15.0
1957	9	2	.25	2	332	15.0
1958	9	2	.28	2	368	15.0
1959	9	2	.27	2	363	15.0
1960	30	8	.28	8	1,244	15.0
1961	34	10	.29	10	1,518	15.0
1962	40	13	.32	13	1,905	15.0
1963	13	4	.30	4	592	15.0
1964	31	9	.28	9	1,311	15.0

(a) Beginning in 1964 renumbered as s.c. 402-31

Table 14

Imports: Manganese ore, s.c. 6216^(a)

Tariff Item 335

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	133,364	2,720	.02	-	-	-
1954	97,925	2,277	.02	-	-	-
1955	350,563	7,338	.02	-	-	-
1956	415,955	9,137	.02	-	-	-
1957	262,637	7,520	.03	-	-	-
1958	84,119	1,723	.02	-	-	-
1959	236,909	5,017	.02	-	-	-
1960	112,700	2,544	.02	-	-	-
1961	152,032	3,465	.02	-	-	-
1962	181,450	4,038	.02	3	1,090	32.2
1963	213,782	3,822	.02	-	-	-
1964	125,627	3,945	.03	3	388	15.0
<u>2. United Kingdom</u>						
1953	111	11	.10	-	-	-
1954	151	14	.09	-	-	-
1955	189	15	.08	-	-	-
1956	341	26	.08	-	-	-
1957	237	30	.12	-	-	-
1958	225	30	.13	-	-	-
1959	222	26	.12	-	-	-
1960	87	13	.14	-	-	-
1961	87	23	.26	-	-	-
1962	131	28	.21	-	-	-
1963	58	4	.06	-	-	-
1964	28	2	.06	-	-	-

Table 14
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>3. United States</u>						
1953	63,417	1,191	.02	-	-	-
1954	64,609	1,590	.02	-	-	-
1955	94,403	1,948	.02	-	-	-
1956	188,038	4,105	.02	-	-	-
1957	7,526	526	.07	-	-	-
1958	22,088	768	.03	-	-	-
1959	27,774	1,244	.04	-	-	-
1960	8,690	613	.07	-	-	-
1961	12,777	692	.05	-	-	-
1962	56,026	1,540	.03	3	1,090	32.2
1963	33,069	1,108	.03	-	-	-
1964	13,318	903	.07	3	388	15.0
<u>4. Ghana</u>						
1953	20,070	453	.02	-	-	-
1954	11,200	249	.02	-	-	-
1955	112,022	2,297	.02	-	-	-
1956	61,375	1,385	.02	-	-	-
1957	125,931	3,460	.03	-	-	-
1958	4,724	131	.03	-	-	-
1959	132,491	2,273	.02	-	-	-
1960	44,798	811	.02	-	-	-
1961	50,969	1,080	.02	-	-	-
1962	99,263	1,919	.02	-	-	-
1963	90,878	1,481	.02	-	-	-
1964	34,897	959	.03	-	-	-
<u>5. India</u>						
1953	22,085	372	.02	-	-	-
1954	3,587	71	.02	-	-	-
1955	84,398	1,810	.02	-	-	-
1956	52,399	1,091	.02	-	-	-
1957	39,269	721	.02	-	-	-
1958	13,404	120	.01	-	-	-
1959	24,629	381	.02	-	-	-
1960	-	-	-	-	-	-
1961	26,581	351	.01	-	-	-
1962	1,785	25	.01	-	-	-
1963	-	-	-	-	-	-
1964	13,232	386	.03	-	-	-

Table 14
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>¢</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	/lb.	¢	¢	Dutiable
				(000)		Value

6. Congo

1953	-	-	-	-	-	-
1954	4,480	97	.02	-	-	-
1955	23,902	591	.02	-	-	-
1956	52,968	1,262	.02	-	-	-
1957	60,162	1,875	.03	-	-	-
1958	4,758	144	.03	-	-	-
1959	11,554	243	.02	-	-	-
1960	34,064	704	.02	-	-	-
1961	-	-	-	-	-	-
1962	-	-	-	-	-	-
1963	47,945	586	.01	-	-	-
1964	13,816	308	.02	-	-	-

7. Brazil

1953-56	-	-	-	-	-	-
1957	19,596	673	.03	-	-	-
1958	-	-	-	-	-	-
1959	40,230	848	.02	-	-	-
1960	13,044	254	.02	-	-	-
1961	33,571	701	.02	-	-	-
1962	21,491	460	.02	-	-	-
1963	41,268	584	.01	-	-	-
1964	31,061	878	.03	-	-	-

(a) Beginning in 1964 renumbered as s.c. 258-40 entitled "Manganese in ores and concentrates"

Table 15

Imports: Iron oxides, natural or synthetic, s.c. 402-40(a)

Tariff Items 208t, 246 and 246f

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u> <u>p.c. of</u> <u>Dutiable</u> <u>Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
				(000)		
			<u>1. Total</u>			
1964	6,143	536	.09	508	88,004	17.3
			<u>2. United Kingdom</u>			
1964	251	35	.14	23	2,859	12.3
			<u>3. United States</u>			
1964	3,085	353	.11	338	59,430	17.6
			<u>4. Germany, Fed. Rep. of</u>			
1964	1,844	123	.07	122	21,306	17.5

(a) Prior to 1964 included in s.c. 8199

Table 16

Imports: Oxide of cobalt, s.c. 8187^(a)

Tariff Item 208k

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u> <u>p.c. of</u> <u>Dutiable</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	Value
				(000)		
<u>1. Total</u>						
1953	29	48	1.68	-	-	-
1954	7	14	2.08	7	720	10.0
1955	8	20	2.56	20	2,049	10.0
1956	11	27	2.39	26	2,633	10.0
1957	10	20	1.89	17	1,683	10.0
1958	16	31	1.89	25	2,460	10.0
1959	25	40	1.61	19	1,943	10.0
1960	20	25	1.22	5	524	10.0
1961	28	35	1.23	4	426	10.4
1962	41	48	1.17	4	388	10.0
1963	28	35	1.23	2	235	10.0

2. United Kingdom

1953	29	48	1.68	-	-	-
1954	4	7	1.69	-	-	-
1955	-	-	-	-	-	-
1956	*	1	1.78	-	-	-
1957	2	3	1.38	-	-	-
1958	4	6	1.44	-	-	-
1959	15	22	1.46	1	124	10.0
1960	17	19	1.13	-	-	-
1961	26	31	1.18	-	-	-
1962	38	44	1.16	-	-	-
1963	26	32	1.23	-	-	-

Table 16
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Dutiable</u>
				(000)		<u>Value</u>
<u>3. United States</u>						
1953	-	-	-	-	-	-
1954	3	7	2.69	7	720	10.0
1955	8	20	2.56	20	2,049	10.0
1956	11	26	2.41	26	2,633	10.0
1957	8	17	2.02	17	1,683	10.0
1958	12	25	2.04	25	2,460	10.0
1959	10	18	1.82	18	1,819	10.0
1960	3	5	1.75	5	524	10.0
1961	2	4	1.78	4	426	10.4
1962	3	4	1.21	4	388	10.0
1963	2	2	1.17	2	235	10.0

(a) Beginning in 1964 included in s.c. 402-99.

Table 17

Imports: Titanium dioxide, pure, s.c. 8178^(a)

Tariff Item 242

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>1. Total</u>						
1962	25,241	5,736	.23	472	59,054	12.5
1963	6,735	1,606	.24	809	99,174	12.3
1964	3,677	843	.23	373	48,063	12.9
<u>2. United Kingdom</u>						
1962	23,557	5,263	.22	-	-	-
1963	3,790	812	.21	-	-	-
1964	2,240	471	.21	-	-	-
<u>3. United States</u>						
1962	1,639	465	.28	465	58,122	12.5
1963	2,945	794	.27	793	99,156	12.5
1964	1,386	361	.26	361	46,583	12.9

(a) Prior to 1962 included in s.c. 8181; beginning in 1964 renumbered as s.c. 402-48

Table 18

Imports: Titanium oxide and white pigments containing not less than
14 per cent by weight of titanium dioxide, s.c. 8181(a)

Tariff Item 242

Year	Total Imports		Unit Value	Dutiable Value	Duty Collected	Duty as p.c. of Dutiable Value
	lb.	\$	\$/lb.	\$	\$	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	63,800	8,467	.13	5,572	692,038	12.4
1954	64,212	9,129	.14	5,599	699,892	12.5
1955	71,597	10,505	.15	6,315	789,423	12.5
1956	75,745	12,598	.17	7,948	993,547	12.5
1957	68,470	10,783	.16	5,556	694,509	12.5
1958	58,878	8,465	.14	3,744	468,021	12.5
1959	61,196	8,877	.15	3,895	486,877	12.5
1960	53,793	7,648	.14	3,591	449,116	12.5
1961	53,242	8,067	.15	3,603	450,737	12.5
<u>2. United Kingdom</u>						
1953	15,860	2,820	.18	-	-	-
1954	18,784	3,381	.18	-	-	-
1955	20,967	3,969	.19	-	-	-
1956	19,431	3,884	.20	19	2,354	12.5
1957	22,718	4,712	.21	-	-	-
1958	21,775	4,649	.21	-	-	-
1959	23,793	4,959	.21	-	-	-
1960	19,351	4,053	.21	7	823	12.5
1961	20,764	4,460	.21	-	-	-
<u>3. United States</u>						
1953	47,939	5,647	.12	5,572	692,038	12.4
1954	45,428	5,748	.13	5,599	699,892	12.5
1955	50,630	6,536	.13	6,315	789,423	12.5
1956	56,070	8,638	.15	7,871	983,838	12.5
1957	45,751	6,071	.13	5,556	694,472	12.5
1958	37,100	3,815	.10	3,744	467,959	12.5
1959	35,364	3,545	.10	3,522	440,204	12.5
1960	33,348	3,386	.10	3,375	422,086	12.5
1961	31,849	3,504	.11	3,500	437,809	12.5

(a) Beginning in 1962 s.c. 8181 is divided into s.c. 8178 - Titanium, pure, and s.c. 8953 - Titanium, extended

Table 19

Imports: Oxide of tin, s.c. 8194^(a)

Tariff Item 208r

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>p.c. of</u>
				(000)		<u>Dutiable</u>
						<u>Value</u>
<u>1. Total</u>						
1953	61	55	.91	1	121	15.0
1954	71	62	.89	1	111	15.1
1955	53	50	.94	*	55	15.1
1956	64	63	.98	1	122	15.0
1957	44	41	.93	1	93	15.0
1958	61	60	.98	11	1,615	15.0
1959	44	45	1.01	12	1,775	15.0
1960	39	40	1.02	10	1,444	15.0
1961	50	58	1.16	16	2,409	15.0
1962	54	69	1.29	16	2,367	15.0
1963	53	67	1.27	19	2,854	15.0
<u>2. United Kingdom</u>						
1953	60	55	.91	-	-	-
1954	70	62	.88	-	-	-
1955	53	49	.94	-	-	-
1956	63	62	.98	-	-	-
1957	43	40	.93	-	-	-
1958	53	49	.92	-	-	-
1959	35	33	.93	-	-	-
1960	33	31	.94	-	-	-
1961	40	42	1.05	-	-	-
1962	45	54	1.20	-	-	-
1963	42	48	1.16	-	-	-

Table 19
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Dutiable</u>
				(000)		<u>Value</u>
<u>3. United States</u>						
1953	1	1	.89	1	121	15.0
1954	1	1	1.00	1	111	15.1
1955	*	*	1.04	*	55	15.1
1956	1	1	1.09	1	122	15.0
1957	1	1	1.04	1	93	15.0
1958	8	11	1.39	11	1,615	15.0
1959	9	12	1.32	12	1,775	15.0
1960	7	10	1.42	10	1,444	15.0
1961	10	16	1.60	16	2,409	15.0
1962	9	16	1.73	16	2,367	15.0
1963	11	19	1.70	19	2,854	15.0

(a) Beginning in 1964 included in s.c. 402-99

Table 20

Imports: Litharge, s.c. 8171(a)

Tariff Items 241a and 241

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>1. Total</u>						
1953	1,643	275	.17	5	750	15.0
1954	2,004	326	.16	14	2,137	15.0
1955	2,151	365	.17	9	1,325	15.0
1956	2,104	384	.18	9	1,360	15.0
1957	2,299	384	.17	23	3,432	15.0
1958	2,375	331	.14	14	2,077	15.0
1959	2,313	326	.14	17	2,606	15.0
1960	1,253	187	.15	18	2,674	15.0
1961	1,023	155	.15	31	4,598	15.0
1962	1,544	204	.13	46	6,817	14.9
1963	2,168	292	.13	72	10,728	15.0
1964	3,039	470	.15	141	21,441	15.3

2. United Kingdom

1953	378	59	.16	-	-	-
1954	541	84	.15	-	-	-
1955	753	125	.17	-	-	-
1956	584	106	.18	-	-	-
1957	625	102	.16	-	-	-
1958	650	89	.14	-	-	-
1959	482	63	.13	-	-	-
1960	494	71	.14	-	-	-
1961	416	58	.14	-	-	-
1962	425	59	.14	-	-	-
1963	405	59	.14	-	-	-
1964	516	90	.17	-	-	-

Table 20
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>3. United States</u>						
1953	1,266	215	.17	5	750	15.0
1954	1,459	242	.17	14	2,137	15.0
1955	1,354	233	.17	9	1,325	15.0
1956	1,504	274	.18	9	1,360	15.0
1957	1,674	282	.17	23	3,432	15.0
1958	1,725	243	.14	14	2,077	15.0
1959	1,831	263	.14	17	2,606	15.0
1960	759	116	.15	18	2,674	15.0
1961	605	97	.16	31	4,598	15.0
1962	636	103	.16	27	3,925	14.8
1963	766	142	.19	16	2,406	14.9
1964	1,092	220	.20	63	9,996	15.8

4. Mexico

1953-60	-	-	-	-	-	-
1961	2	*	.11	-	-	-
1962	483	43	.09	19	2,892	15.0
1963	998	91	.09	55	8,322	15.0
1964	1,432	160	.11	77	11,445	14.8

5. Germany, Fed. Rep. of

1953	-	-	-	-	-	-
1954	4	1	.14	-	-	-
1955	44	7	.16	-	-	-
1956	16	3	.19	-	-	-
1957-64	-	-	-	-	-	-

(a) Beginning in 1964 renumbered as s.c. 402-57 also including former s.c. 8172

Table 21

Imports: Lead, red, dry, and orange mineral, s.c. 8172 (a)

Tariff Item 242

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	211	34	.16	5	660	12.5
1954	189	30	.16	2	263	12.5
1955	304	50	.16	3	359	12.5
1956	427	75	.17	4	555	12.5
1957	801	121	.15	10	1,247	12.5
1958	985	128	.13	3	341	12.5
1959	674	85	.13	2	296	12.7
1960	780	107	.14	4	517	12.6
1961	468	60	.13	4	533	12.9
1962	346	41	.12	8	1,270	16.6
1963	318	39	.12	4	619	17.1
<u>2. United Kingdom</u>						
1953	182	29	.16	-	-	-
1954	178	28	.16	-	-	-
1955	290	47	.16	-	-	-
1956	405	70	.17	-	-	-
1957	747	111	.15	-	-	-
1958	955	122	.13	-	-	-
1959	664	83	.12	-	-	-
1960	762	103	.14	1	71	12.5
1961	453	56	.12	-	-	-
1962	304	33	.11	-	-	-
1963	297	35	.12	-	-	-

Table 21
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>3. United States</u>						
1953	29	5	.19	5	660	12.5
1954	11	2	.20	2	263	12.5
1955	14	3	.21	3	359	12.5
1956	23	4	.20	4	555	12.5
1957	53	10	.19	10	1,247	12.5
1958	30	6	.19	3	341	12.5
1959	10	2	.23	2	296	12.7
1960	18	4	.19	4	446	12.6
1961	16	4	.26	4	533	12.9
1962	42	8	.18	8	1,270	16.6
1963	22	4	.17	4	619	17.1

(a) Beginning in 1964 included in s.c. 402-57

Imports: Antimony oxide, s.c. 8179(a)

Tariff Item 242

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>1. Total</u>						
1953	129	33	.25	9	1,067	12.5
1954	279	68	.24	21	2,589	12.5
1955	286	68	.24	23	2,865	12.5
1956	262	63	.24	13	1,636	12.5
1957	366	87	.24	10	1,256	12.5
1958	323	71	.22	8	942	12.5
1959	511	111	.22	3	413	12.5
1960	437	97	.22	2	226	12.5
1961	359	90	.25	8	1,017	12.5
1962	628	164	.26	6	806	12.7
1963	649	183	.28	5	662	12.5
1964	710	331	.47	77	9,695	12.5

2. United Kingdom

1953	74	18	.25	-	-	-
1954	181	42	.23	-	-	-
1955	130	29	.22	-	-	-
1956	199	47	.24	-	-	-
1957	247	56	.23	-	-	-
1958	184	41	.22	-	-	-
1959	300	65	.22	-	-	-
1960	253	56	.22	-	-	-
1961	171	46	.27	-	-	-
1962	332	94	.28	-	-	-
1963	512	152	.30	-	-	-
1964	404	183	.45	-	-	-

Table 22
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	Duty as p.c. of Dutiable Value
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>3. United States</u>						
1953	53	14	.27	8	1,002	12.5
1954	74	20	.27	20	2,525	12.5
1955	91	25	.28	22	2,800	12.5
1956	56	15	.26	11	1,438	12.5
1957	55	15	.27	6	718	12.5
1958	71	16	.23	3	337	12.5
1959	80	18	.22	2	243	12.5
1960	139	31	.22	2	226	12.5
1961	100	23	.23	7	842	12.5
1962	128	34	.26	4	571	12.8
1963	82	21	.26	5	662	12.5
1964	122	65	.53	36	4,496	12.6
<u>4. Belgium and Luxembourg</u>						
1953	2	1	.23	1	65	12.4
1954	2	1	.23	1	64	12.5
1955	2	1	.23	1	65	12.6
1956	7	2	.24	2	198	12.5
1957	20	4	.21	4	538	12.5
1958	68	14	.20	5	605	12.5
1959	43	9	.20	1	170	12.5
1960	44	9	.21	-	-	-
1961	44	11	.25	1	175	12.5
1962	67	18	.27	-	-	-
1963	11	3	.29	-	-	-
1964	29	18	.62	-	-	-

Table 22
(Cont'd)Duty as
p.c. of
Dutiable
Value

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	
				(000)		
<u>5. Germany, Fed. Rep. of</u>						
1953	-	-	-	-	-	-
1954	22	5	.24	-	-	-
1955	63	14	.22	-	-	-
1956	-	-	-	-	-	-
1957	44	12	.26	-	-	-
1958	-	-	-	-	-	-
1959	88	19	.22	-	-	-
1960-63	-	-	-	-	-	-
1964	45	30	.68	24	2,942	12.5
<u>6. China, Comm.</u>						
1953-61	-	-	-	-	-	-
1962	100	17	.17	2	235	12.5
1963	44	7	.17	-	-	-
1964	110	35	.32	18	2,257	12.5
<u>7. France</u>						
1953-60	-	-	-	-	-	-
1961	44	10	.23	-	-	-
1962-64	-	-	-	-	-	-

(a) Beginning in 1964 renumbered as s.c. 402-61

Table 23

Imports: Oxide of copper, s.c. 8188 (a)

Tariff Item 208r

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	\$/lb.	\$	\$	Dutiable
				(000)		Value
<u>1. Total</u>						
1953	124	55	.44	7	1,088	15.0
1954	208	80	.38	5	790	15.0
1955	149	74	.50	6	836	15.0
1956	137	76	.55	8	1,248	15.0
1957	186	82	.44	14	2,035	15.0
1958	205	72	.35	7	1,082	15.0
1959	115	46	.40	6	1,067	17.7
1960	168	71	.42	9	1,451	16.8
1961	198	79	.40	3	484	15.2
1962	286	123	.43	15	2,720	18.5
1963	542	224	.41	23	3,990	17.2
1964	320	167	.52	34	6,330	18.7
<u>2. United Kingdom</u>						
1953	103	44	.42	-	-	-
1954	143	54	.38	-	-	-
1955	130	64	.49	-	-	-
1956	126	67	.53	-	-	-
1957	171	69	.40	-	-	-
1958	191	65	.34	-	-	-
1959	106	40	.37	-	-	-
1960	158	62	.39	-	-	-
1961	190	75	.39	-	-	-
1962	271	108	.40	-	-	-
1963	502	199	.40	2	306	12.5
1964	210	102	.49	-	-	-

Table 23
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>3. United States</u>						
1953	21	11	.51	7	1,088	15.0
1954	66	27	.40	5	790	15.0
1955	19	10	.53	6	836	15.0
1956	10	9	.88	8	1,248	15.0
1957	15	14	.90	14	2,035	15.0
1958	15	7	.49	7	1,082	15.0
1959	9	6	.69	6	1,067	17.7
1960	10	9	.95	9	1,451	16.8
1961	8	4	.51	3	484	15.2
1962	15	16	1.04	15	2,720	18.5
1963	30	21	.72	21	3,684	17.8
1964	90	56	.62	34	6,330	18.7

(a) Beginning in 1964 renumbered as s.c. 402-81 which also includes part of former s.c. 8415

Table 24

Imports: Calcium molybdate, vanadium oxide and tungsten oxide for
the manufacture of steel, s.c. 8318^(a)

Tariff Item 208g and 490a

Year	<u>Total Imports</u>		Unit Value	Dutiable Value	Duty Collected	Duty as p.c. of Dutiable Value
	lb. (000)	¢ (000)	¢/lb.	¢ (000)	¢ (000)	
<u>1. Total</u>						
1953	198	101	.51	-	-	-
1954	121	74	.61	-	-	-
1955	129	174	1.35	-	-	-
1956	322	367	1.14	-	-	-
1957	286	468	1.64	-	-	-
1958	135	109	.81	-	-	-
1959	76	83	1.09	*	40	15.1
1960	237	332	1.40	-	-	-
1961	47	88	1.88	-	-	-
1962	103	180	1.74	5	877	16.6
1963	148	198	1.33	3	426	16.8
<u>2. United States</u>						
1953	198	101	.51	-	-	-
1954	121	74	.61	-	-	-
1955	129	174	1.35	-	-	-
1956	322	367	1.14	-	-	-
1957	250	411	1.65	-	-	-
1958	135	109	.81	-	-	-
1959	76	83	1.09	*	40	15.1
1960	237	332	1.40	-	-	-
1961	45	84	1.88	-	-	-
1962	100	178	1.77	4	541	15.0
1963	148	198	1.33	3	426	16.8

(a) Beginning in 1964 included in s.c. 402-99 and 404-99

Table 25

Imports: Molybdenum oxide, s.c. 8380 (a)

Tariff Item 208g

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	358	375	1.05	-	-	-
1954	423	208	.49	-	-	-
1955	658	546	.83	-	-	-
1956	955	705	.74	-	-	-
1957	477	402	.84	-	-	-
1958	305	218	.72	-	-	-
1959	306	242	.79	5	724	15.0
1960	656	596	.91	-	-	-
1961	266	212	.80	-	-	-
1962	328	303	.92	26	1,874	7.1
1963	259	246	.95	24	2,888	12.2
1964	491	707	1.44	-	-	-
<u>2. United States</u>						
1953	356	372	1.05	-	-	-
1954	423	208	.49	-	-	-
1955	658	546	.83	-	-	-
1956	955	705	.74	-	-	-
1957	477	402	.84	-	-	-
1958	305	218	.72	-	-	-
1959	306	242	.79	5	724	15.0
1960	216	191	.89	-	-	-
1961	266	212	.80	-	-	-
1962	328	303	.92	26	1,874	7.1
1963	259	246	.95	24	2,888	12.2
1964	453	521	1.15	-	-	-

(a) Beginning in 1964 renumbered as s.c. 402-87

Table 26

Imports: Metallic elements and tungstic acid for the manufacture of
metal filaments for electric lamps, s.c. 6233(a)

Tariff Item 316b

<u>Year</u>	<u>Total Imports</u> \$ (000)	<u>Dutiable</u> <u>Value</u> \$ (000)	<u>Duty</u> <u>Collected</u> \$	<u>Duty as</u> <u>p.c. of</u> <u>Dutiable</u> <u>Value</u>
<u>1. Total</u>				
1953	1,142	--	--	--
1954	845	--	--	--
1955	1,166	--	--	--
1956	1,477	--	--	--
1957	1,422	--	--	--
1958	1,103	--	--	--
1959	1,331	--	--	--
1960	1,200	--	--	--
1961	1,284	--	--	--
1962	1,791	*	17	5.1
1963	1,843	1	165	21.0
<u>2. United States</u>				
1953	1,142	--	--	--
1954	818	--	--	--
1955	1,054	--	--	--
1956	1,397	--	--	--
1957	1,338	--	--	--
1958	1,034	--	--	--
1959	1,241	--	--	--
1960	1,113	--	--	--
1961	1,131	--	--	--
1962	1,491	*	17	5.1
1963	1,683	1	165	21.0

(a) Beginning in 1964 included in s.c. 402-99, 459-79 and 682-90

Table 27

Imports: Zirconium oxide, s.c. 7016^(a)

Tariff Item 246a

<u>Year</u>	<u>Total Imports</u> \$ (000)	<u>Dutiable Value</u> \$ (000)	<u>Duty Collected</u> \$	<u>Duty as p.c. of Dutiable Value</u>
<u>1. Total</u>				
1953	23	23	1,138	5.0
1954	10	10	499	5.0
1955	19	19	962	5.0
1956	17	17	852	5.0
1957	21	21	1,026	5.0
1958	23	23	1,128	5.0
1959	39	39	1,948	5.0
1960	24	23	1,169	5.0
1961	33	32	1,627	5.0
1962	58	56	2,853	5.0
1963	61	61	3,073	5.0
<u>2. United States</u>				
1953	23	23	1,138	5.0
1954	10	10	499	5.0
1955	19	19	962	5.0
1956	17	17	852	5.0
1957	21	21	1,026	5.0
1958	23	23	1,128	5.0
1959	39	39	1,948	5.0
1960	24	23	1,169	5.0
1961	33	32	1,627	5.0
1962	58	56	2,853	5.0
1963	61	61	3,073	5.0

(a) Beginning in 1964 included in s.c. 272-99

Table 28

Imports: Metallic oxides, n.o.p., s.c. 8199^(a)

Tariff Item 246

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1962	6,244	482	.08	475	80,397	16.9
1963	5,472	541	.10	474	81,832	17.3
<u>2. United Kingdom</u>						
1962	659	50	.08	49	6,069	12.4
1963	431	33	.08	31	3,863	12.6
<u>3. United States</u>						
1962	3,395	305	.09	300	52,384	17.4
1963	3,186	403	.13	338	59,467	17.6
<u>4. Germany, Fed. Rep. of</u>						
1962	1,470	110	.07	108	18,881	17.4
1963	1,143	89	.08	89	15,762	17.7

(a) Prior to 1962 included in s.c. 8189; beginning in 1964 included in s.c. 402-40 and s.c. 402-99

Table 29

Imports: Inorganic bases and metallic oxides, hydroxides and
 peroxides n.e.s., s.c. 402-99(a)

Tariff Items various

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	lb.	\$	\$/lb.	\$	\$	
	(000)	(000)		(000)		
<u>1. Total</u>						
1964	49,507	2,181	.04	1,105	168,094	15.2
<u>2. United Kingdom</u>						
1964	807	309	.38	19	2,474	12.9
<u>3. United States</u>						
1964	48,296	1,746	.04	1,011	154,025	15.2
<u>4. France</u>						
1964	52	9	.17	6	756	12.5
<u>5. Germany, Fed. Rep. of</u>						
1964	215	69	.32	68	10,839	15.9
<u>6. Republic of South Africa</u>						
1964	26	23	.89	-	-	-
<u>7. Japan</u>						
1964	106	19	.18	-	-	-

(a) Prior to 1964 included in various statistical classes

Table 30

Imports: Soda, fluoride of, s.c. 8369^(a)

Tariff Items 208t, 711 and 791

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	183	23	.13	16	2,766	17.6
1954	208	28	.13	18	2,810	15.6
1955	733	90	.12	19	2,911	15.6
1956	803	94	.12	21	3,273	15.2
1957	640	78	.12	9	1,394	15.1
1958	409	52	.13	9	1,395	15.2
1959	563	67	.12	11	1,643	15.2
1960	627	74	.12	15	2,330	15.1
1961	779	90	.12	20	3,012	15.2
1962	690	88	.13	39	5,924	15.3
1963	895	111	.12	59	8,783	15.0
<u>2. United Kingdom</u>						
1953	71	7	.10	-	-	-
1954	92	10	.10	1	163	15.0
1955	602	67	.11	1	128	14.9
1956	682	73	.11	2	349	15.0
1957	600	69	.11	-	-	-
1958	363	42	.12	-	-	-
1959	522	55	.11	-	-	-
1960	545	61	.11	2	325	15.0
1961	638	70	.11	-	-	-
1962	399	47	.12	1	154	14.8
1963	443	53	.12	-	-	-

Table 30
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>3. United States</u>						
1953	112	16	.14	16	2,766	17.6
1954	116	18	.16	17	2,647	15.6
1955	131	23	.17	18	2,783	15.6
1956	122	21	.17	19	2,924	15.3
1957	40	9	.23	9	1,394	15.1
1958	29	8	.28	8	1,214	15.2
1959	37	11	.30	11	1,643	15.2
1960	42	9	.22	9	1,354	15.1
1961	101	16	.16	16	2,422	15.3
1962	270	38	.14	35	5,411	15.3
1963	443	57	.13	57	8,631	15.0

(a) Beginning in 1964 included in s.c. 404-99

Table 31

Imports: Cryolite or kryolite, s.c. 6003^(a)

Tariff Item 334

<u>Year</u>	<u>Total</u>	<u>Imports</u>	<u>Unit Value</u>
	lb.	\$	\$/lb.
	(000)	(000)	

1. Total

1953	169	21	.12
1954	8,908	815	.09
1955	6,806	753	.11
1956	36,620	4,210	.12
1957	31,835	3,308	.10
1958	13,670	1,328	.10
1959	12,028	1,017	.08
1960	16,678	1,387	.08
1961	8,067	685	.08
1962	10,220	1,058	.10
1963	9,714	842	.09

2. United States

1953	169	21	.12
1954	90	11	.12
1955	191	24	.13
1956	246	30	.12
1957	188	24	.13
1958	237	30	.13
1959	245	30	.12
1960	384	46	.12
1961	284	33	.12
1962	439	60	.14
1963	1,182	145	.12

Table 31
(Cont'd)

<u>Year</u>	<u>Total</u> <u>lb.</u> (000)	<u>Imports</u> <u>\$</u> (000)	<u>Unit Value</u> <u>\$/lb.</u>
<u>3. Denmark</u>			
1953	-	-	-
1954	8,818	804	.09
1955	4,409	468	.11
1956	7,711	825	.11
1957	13,394	1,370	.10
1958	9,003	883	.10
1959	11,558	971	.08
1960	8,845	688	.08
1961	6,614	528	.08
1962	6,706	636	.09
1963	8,426	686	.08
<u>4. Italy</u>			
1953-56	-	-	-
1957	9,434	1,007	.11
1958	3,307	312	.09
1959	224	17	.07
1960	7,449	653	.09
1961	1,146	121	.11
1962	3,062	360	.12
1963	22	3	.13

(a) Beginning in 1964 included in s.c. 279-10 and 404-99

Table 32

Imports: Calcium chloride, s.c. 8315 (a)

Tariff Items 208a1, 208a2 and 208d

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	9	245	25.86	245	31,885	13.0
1954	8	220	26.46	214	25,920	12.1
1955	18	472	26.55	472	65,965	14.0
1956	30	853	28.48	843	119,411	14.2
1957	45	1,337	29.44	1,322	187,141	14.2
1958	34	1,023	29.94	1,013	140,338	13.9
1959	36	1,037	28.78	1,022	138,984	13.6
1960	23	700	30.22	691	87,389	12.6
1961	18	592	32.99	529	70,819	12.2
1962	40	1,315	33.01	1,297	170,551	13.1
1963	31	1,100	35.32	1,096	130,628	11.9
1964	33	1,171	36.00	1,168	151,049	12.9
<u>2. United States</u>						
1953	9	241	25.64	240	31,630	13.2
1954	8	202	25.69	196	24,523	12.5
1955	17	454	26.22	454	64,680	14.2
1956	30	853	28.47	843	119,401	14.2
1957	45	1,335	29.40	1,320	187,093	14.2
1958	34	1,016	29.81	1,007	140,031	13.9
1959	36	1,033	28.72	1,019	138,818	13.6
1960	23	700	30.22	691	87,389	12.6
1961	18	592	33.01	579	70,819	12.2
1962	40	1,315	33.01	1,297	170,551	13.1
1963	31	1,082	35.30	1,078	129,075	12.0
1964	32	1,162	35.84	1,162	150,839	13.0

(a) Beginning in 1964 renumbered as s.c. 403-22

Table 33

Imports: Chloride of aluminum, s.c. 8252 ^(a)

Tariff Items 211a and 851

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	1,233	112	.09	28	2,775	10.0
1954	1,040	121	.12	21	2,122	10.0
1955	1,684	134	.08	43	4,335	10.0
1956	2,877	400	.14	46	4,618	10.0
1957	2,904	393	.14	50	5,022	10.0
1958	3,300	460	.14	37	3,686	10.0
1959	3,337	453	.14	30	2,999	10.0
1960	2,430	349	.14	25	2,514	10.1
1961	330	25	.07	25	2,666	10.8
1962	193	20	.10	20	2,052	10.4
1963	368	28	.07	27	2,877	10.6
1964	588	70	.12	50	6,165	12.2
<u>2. United States</u>						
1953	1,233	112	.09	28	2,775	10.0
1954	1,040	121	.12	21	2,122	10.0
1955	1,684	134	.08	43	4,335	10.0
1956	2,877	400	.14	46	4,618	10.0
1957	2,904	393	.14	50	5,022	10.0
1958	3,300	460	.14	37	3,686	10.0
1959	3,337	453	.14	30	2,999	10.0
1960	2,430	349	.14	25	2,514	10.1
1961	330	25	.07	25	2,666	10.8
1962	193	20	.10	20	2,052	10.4
1963	368	28	.07	27	2,877	10.6
1964	588	70	.12	50	6,165	12.2

^(a) Beginning in 1964 renumbered as s.c. 403-28

Table 34

Imports: Sal ammoniac, s.c. 8262 (a)

Tariff Item 208j

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Dutiable</u>
				(000)		<u>Value</u>
<u>1. Total</u>						
1953	488	29	.06	10	2,584	25.0
1954	613	34	.06	12	2,913	25.0
1955	566	33	.06	15	3,849	25.0
1956	579	38	.07	16	4,059	25.0
1957	548	37	.07	17	4,340	25.0
1958	246	15	.06	13	3,365	25.0
1959	202	13	.06	10	2,563	25.0
1960	199	12	.06	9	2,139	25.0
1961	150	11	.07	5	1,351	25.0
1962	95	9	.09	2	609	25.1
1963	32	4	.12	2	488	23.4
<u>2. United Kingdom</u>						
1953	336	19	.06	-	-	-
1954	363	22	.06	-	-	-
1955	292	18	.06	-	-	-
1956	325	22	.07	-	-	-
1957	296	19	.07	-	-	-
1958	24	1	.05	-	-	-
1959	39	2	.06	-	-	-
1960	60	4	.06	-	-	-
1961	56	6	.10	-	-	-
1962	63	6	.10	-	-	-
1963	24	2	.08	-	-	-

Table 34
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	Duty as p.c. of Dutiable Value
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	

3. United States

1953	70	7	.10	7	1,780	25.0
1954	12	2	.18	2	540	25.0
1955	65	7	.10	7	1,691	25.0
1956	50	7	.14	7	1,757	25.0
1957	193	15	.08	15	3,759	25.0
1958	59	6	.10	6	1,517	25.0
1959	25	4	.15	3	866	25.0
1960	17	3	.16	3	673	25.1
1961	11	1	.14	1	361	25.1
1962	5	1	.21	1	252	25.1
1963	8	2	.27	2	488	23.4

4. Germany, Fed. Rep. of

1953	49	2	.04	2	452	25.0
1954	237	9	.04	9	2,351	25.0
1955	148	7	.04	7	1,634	25.0
1956	142	7	.05	7	1,720	25.0
1957	59	2	.04	2	581	25.0
1958	142	7	.05	7	1,680	25.0
1959	137	6	.05	6	1,601	25.0
1960	121	6	.05	6	1,466	25.0
1961	84	4	.05	4	990	25.0
1962	28	1	.05	1	357	25.1
1963	-	-	-	-	-	-

(a) Beginning in 1964 included in s.c. 404-99

Table 35

Imports: Mercury salts, s.c. 8377^(a)

Tariff Items 208t and 711

<u>Year</u>	<u>Total Imports</u> \$ (000)	<u>Dutiable</u> <u>Value</u> \$ (000)	<u>Duty</u> <u>Collected</u> \$	<u>Duty as</u> <u>p.c. of</u> <u>Dutiable</u> <u>Value</u>
<u>1. Total</u>				
1953	34	14	2,369	16.6
1954	18	12	1,936	16.6
1955	11	6	1,091	18.2
1956	2	2	287	18.5
1957	24	13	2,049	15.5
1958	11	7	1,169	15.7
1959	6	4	684	16.9
1960	7	3	536	15.6
1961	4	3	578	16.7
1962	4	2	336	17.7
1963	10	8	1,357	16.8
<u>2. United Kingdom</u>				
1953	7	7	1,010	15.0
1954	13	6	904	15.0
1955	5	*	19	14.7
1956	*	*	20	15.3
1957	17	10	1,437	15.0
1958	9	5	781	15.0
1959	4	2	309	15.0
1960	6	3	449	15.0
1961	2	2	277	15.0
1962	2	*	56	15.1
1963	5	4	529	15.0

Table 35
(Cont'd)

<u>Year</u>	<u>Total Imports</u> \$ (000)	<u>Dutiable Value</u> \$ (000)	<u>Duty Collected</u> \$	<u>Duty as p.c. of Dutiable Value</u>
<u>3. United States</u>				
1953	27	8	1,359	18.0
1954	6	6	1,032	18.4
1955	6	6	1,072	18.2
1956	1	1	267	18.8
1957	7	4	612	17.0
1958	2	2	388	17.3
1959	3	2	375	18.9
1960	*	*	87	19.6
1961	1	1	185	17.8
1962	2	2	280	18.3
1963	3	3	425	15.0

(a) Beginning in 1964 included in s.c. 404-99

Table 36

Imports: Zinc, chloride of, s.c. 8278^(a)

Tariff Item 208s

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>1. Total</u>						
1953	272	29	.11	22	4,345	20.0
1954	296	28	.09	16	3,220	20.0
1955	257	28	.11	18	3,549	20.0
1956	514	53	.10	32	6,320	20.0
1957	323	35	.11	19	3,796	20.0
1958	224	23	.10	13	2,625	20.0
1959	332	29	.09	17	3,284	19.7
1960	307	29	.09	15	2,991	20.0
1961	383	39	.10	17	3,376	20.0
1962	436	46	.11	26	5,178	20.0
1963	414	44	.11	22	4,304	20.0
<u>2. United Kingdom</u>						
1953	60	6	.09	-	-	-
1954	152	12	.08	-	-	-
1955	110	11	.10	-	-	-
1956	210	21	.10	-	-	-
1957	162	16	.10	-	-	-
1958	107	10	.09	-	-	-
1959	133	12	.09	-	-	-
1960	150	14	.09	-	-	-
1961	227	22	.10	-	-	-
1962	206	20	.10	-	-	-
1963	223	22	.10	-	-	-

Table 36
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>3. United States</u>						
1953	212	24	.11	22	4,345	20.0
1954	144	16	.11	16	3,220	20.0
1955	148	18	.12	18	3,549	20.0
1956	304	32	.10	32	6,320	20.0
1957	162	19	.12	19	3,796	20.0
1958	113	13	.11	13	2,546	20.0
1959	161	13	.08	13	2,581	20.0
1960	147	14	.09	14	2,760	20.0
1961	122	13	.11	13	2,592	20.0
1962	182	20	.11	20	4,059	20.0
1963	143	16	.11	16	3,252	20.0
<u>4. Germany, Fed. Rep. of</u>						
1953-57	-	-	-	-	-	-
1958	4	*	.09	*	79	20.0
1959	37	4	.10	4	703	18.5
1960	11	1	.11	1	231	20.0
1961	34	4	.11	4	784	20.0
1962	49	6	.11	6	1,119	20.0
1963	36	4	.11	4	834	20.0

(a) Beginning in 1964 included in s.c. 404-99

Table 37

Imports: Sal ammoniac skimmings, s.c. 8263(a)

Tariff Item 210h

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	272	24	.09	-	-	-
1954	274	24	.09	-	-	-
1955	675	63	.09	-	-	-
1956	806	71	.09	-	-	-
1957	1,364	82	.06	-	-	-
1958	918	67	.07	-	-	-
1959	1,009	91	.09	80	14,997	18.7
1960	729	63	.09	60	11,413	18.9
1961	468	40	.09	39	7,042	17.9
1962	489	42	.09	42	9,323	22.4
1963	480	42	.09	42	7,402	17.7
<u>2. United Kingdom</u>						
1953	67	5	.07	-	-	-
1954	5	*	.06	-	-	-
1955	20	1	.06	-	-	-
1956	7	*	.08	-	-	-
1957	-	-	-	-	-	-
1958	-	-	-	-	-	-
1959	314	21	.07	21	3,162	15.0
1960	222	15	.07	15	2,282	15.4
1961	224	17	.08	17	2,555	15.0
1962	200	16	.08	16	3,109	20.0
1963	245	19	.08	19	2,914	15.0

Table 37
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>3. United States</u>						
1953	205	20	.10	-	-	-
1954	134	14	.11	-	-	-
1955	442	47	.11	-	-	-
1956	353	37	.11	-	-	-
1957	1,104	63	.06	-	-	-
1958	689	50	.07	-	-	-
1959	529	58	.11	47	9,427	20.0
1960	319	32	.10	29	5,860	20.0
1961	67	10	.14	9	1,832	20.0
1962	68	9	.13	9	2,167	24.3
1963	103	12	.12	12	2,381	19.9
<u>4. Belgium and Luxembourg</u>						
1953	-	-	-	-	-	-
1954	-	-	-	-	-	-
1955	31	2	.07	-	-	-
1956	88	6	.07	-	-	-
1957	93	7	.07	-	-	-
1958	132	10	.07	-	-	-
1959	133	10	.07	10	1,940	20.0
1960	118	12	.10	12	2,300	20.0
1961	166	12	.07	12	2,479	20.0
1962	221	17	.08	17	4,047	23.5
1963	132	11	.08	11	2,107	20.0

(a) Beginning in 1964 included in s.c. 258-99

Table 38

Imports: Tin, bichloride of, and tin crystals, s.c. 8277(a)

Tariff Item 2081

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>p.c. of</u>
				(000)		<u>Dutiable</u>
						<u>Value</u>
<u>1. Total</u>						
1953	6	6	.95	5	534	10.0
1954	8	8	.96	7	709	10.0
1955	10	10	.99	10	983	10.0
1956	9	9	.97	8	805	10.0
1957	13	14	1.01	11	1,087	10.0
1958	13	11	.84	6	605	10.0
1959	11	10	.88	6	641	10.1
1960	11	9	.84	5	576	10.8
1961	13	13	.96	6	670	10.9
1962	13	14	1.08	8	886	11.5
1963	22	23	1.05	11	1,206	11.2
<u>2. United Kingdom</u>						
1953	*	*	.83	-	-	-
1954	*	*	.95	-	-	-
1955	*	*	.74	-	-	-
1956	1	*	.75	-	-	-
1957	4	3	.66	-	-	-
1958	7	5	.65	-	-	-
1959	5	3	.66	-	-	-
1960	6	4	.66	-	-	-
1961	8	6	.82	-	-	-
1962	6	5	.85	-	-	-
1963	12	9	.81	-	-	-

Table 38
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	
<u>3. United States</u>						
1953	6	5	.96	5	534	10.0
1954	7	7	.96	7	709	10.0
1955	10	10	1.00	10	983	10.0
1956	8	8	1.00	8	805	10.0
1957	9	11	1.16	11	1,087	10.0
1958	6	6	1.09	6	605	10.0
1959	6	6	1.06	6	641	10.1
1960	5	5	1.05	5	576	10.8
1961	5	6	1.16	6	670	10.9
1962	7	9	1.30	8	886	11.5
1963	11	14	1.32	11	1,206	11.2

(a) Beginning in 1964 included in s.c. 404-99

Table 39

Imports: Chloride of lime, s.c. 8316(a)

Tariff Items 208a1 and 208a2

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	3,832	177	.05	94	4,037	4.3
1954	2,945	187	.06	99	3,877	3.9
1955	3,697	247	.07	136	5,022	3.7
1956	3,316	221	.07	124	6,586	5.3
1957	2,632	212	.08	133	5,903	4.4
1958	3,048	254	.08	166	6,356	3.8
1959	2,726	282	.10	213	8,941	4.2
1960	3,742	367	.10	260	8,718	3.4
1961	2,179	334	.15	280	10,389	3.7
1962	7,144	422	.06	398	14,868	3.7
1963	2,544	477	.19	449	8,284	1.8
1964	2,834	551	.19	515	13,551	2.6

2. United Kingdom

1953	2,254	83	.04	-	-	-
1954	2,320	88	.04	-	-	-
1955	2,848	109	.04	-	-	-
1956	2,438	95	.04	-	-	-
1957	1,837	71	.04	-	-	-
1958	2,085	84	.04	-	-	-
1959	1,668	67	.04	*	2	3.2
1960	2,504	100	.04	-	-	-
1961	717	30	.04	-	-	-
1962	554	23	.04	-	-	-
1963	582	25	.04	-	-	-
1964	633	31	.05	-	-	-

Table 39
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	
				(000)		

3. United States

1953	1,579	94	.06	94	4,037	4.3
1954	582	97	.17	97	3,812	3.9
1955	799	136	.17	134	4,947	3.7
1956	798	120	.15	117	6,465	5.5
1957	744	136	.18	128	5,827	4.6
1958	787	150	.19	146	6,091	4.2
1959	939	200	.21	198	8,594	4.3
1960	1,129	249	.22	242	7,778	3.2
1961	1,069	238	.22	230	9,486	4.1
1962	6,286	359	.06	359	14,409	4.0
1963	1,715	411	.24	408	7,914	1.9
1964	2,067	498	.24	493	13,350	2.7

4. Japan

1953	-	-	-	-	-	-
1954	-	-	-	-	-	-
1955	2	*	.14	*	3	1.0
1956	51	7	.13	7	76	1.1
1957	40	5	.12	5	59	1.2
1958	116	17	.15	17	174	1.0
1959	107	14	.13	14	329	2.3
1960	109	17	.16	17	940	5.4
1961	392	66	.17	50	903	1.8
1962	304	39	.13	39	459	1.2
1963	247	41	.17	41	370	0.9
1964	134	22	.17	22	201	0.9

(a) Beginning in 1964 renumbered as s.c. 403-38 entitled "Calcium hypochlorite"

Table 40

Imports: Potash, Chlorate, not further prepared than
ground, s.c. 8329(a)

Tariff Item 209d

Year	Total Imports		Unit	Dutiable	Duty	Duty as
	lb.	\$	Value	Value	Collected	p.c. of
	(000)	(000)	\$/lb.	\$	\$	Dutiable
				(000)		Value
<u>1. Total</u>						
1953	98	13	.13	13	1,978	15.0
1954	118	16	.13	16	2,338	15.0
1955	132	19	.14	16	2,367	15.0
1956	125	17	.14	14	2,153	15.0
1957	143	19	.14	19	2,891	15.0
1958	81	12	.15	12	1,838	15.0
1959	87	13	.15	12	1,778	15.0
1960	79	10	.13	8	1,168	15.0
1961	101	16	.16	16	2,358	15.0
1962	116	21	.18	21	3,154	15.0
1963	47	6	.12	6	876	15.0
<u>2. United States</u>						
1953	52	7	.14	7	1,095	15.0
1954	29	5	.16	5	690	15.0
1955	43	8	.17	8	1,128	15.0
1956	36	7	.19	7	1,008	15.0
1957	32	6	.20	6	928	15.0
1958	37	7	.19	7	1,082	15.0
1959	20	5	.25	4	647	15.0
1960	13	3	.20	3	401	15.0
1961	57	11	.19	11	1,597	15.0
1962	71	16	.22	16	2,373	15.0
1963	*	*	.27	*	16	16.0

Table 40
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>3. Switzerland</u>						
1953	46	6	.13	6	871	15.0
1954	89	11	.12	11	1,648	15.0
1955	66	8	.12	5	776	15.0
1956	89	10	.11	8	1,145	15.0
1957	109	13	.12	13	1,928	15.0
1958	44	5	.11	5	756	15.0
1959	66	8	.11	8	1,131	15.0
1960	66	7	.11	5	767	15.0
1961	44	5	.12	5	761	15.0
1962	45	5	.11	5	781	15.0
1963	25	3	.11	3	422	15.0

(a) Beginning in 1964 included in s.c. 404-99

Table 41

Imports: Soda, chlorate of, s.c. 8353^(a)

Tariff Items 210, 791 and 851

Year	Total Imports		Unit	Dutiable	Duty	Duty as
	lb.	\$	Value	Value	Collected	p.c. of
	(000)	(000)	\$/lb.	\$	\$	Dutiable
				(000)		Value
<u>1. Total</u>						
1953	220	15	.07	-	-	-
1954	300	26	.09	-	-	-
1955	121	9	.07	*	33	12.6
1956	489	40	.08	*	6	11.8
1957	1	*	.27	*	31	12.7
1958	703	54	.08	32	3,943	12.5
1959	4,375	192	.04	31	3,882	12.5
1960	-	-	-	-	-	-
1961	-	-	-	-	-	-
1962	-	-	-	-	-	-
1963	-	-	-	-	-	-
<u>2. United States</u>						
1953	-	-	-	-	-	-
1954	-	-	-	-	-	-
1955	121	9	.07	*	33	12.6
1956	489	40	.08	*	6	11.8
1957	*	*	.27	*	31	12.7
1958	703	54	.08	32	3,943	12.5
1959	226	17	.07	-	-	-
1960	-	-	-	-	-	-
1961	-	-	-	-	-	-
1962	-	-	-	-	-	-
1963	-	-	-	-	-	-
<u>3. France</u>						
1953	220	15	.07	-	-	-
1954	300	26	.09	-	-	-
1955-57	-	-	-	-	-	-
1959	4,149	175	.04	31	3,882	12.5
1960	-	-	-	-	-	-
1961	-	-	-	-	-	-
1962	-	-	-	-	-	-
1963	-	-	-	-	-	-

(a) Beginning in 1964 included in s.c. 404-99

Table 42

Imports: Soda, bromide of, s.c. 8339(a)

Tariff Items 208t and 711

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	67	20	.31	8	1,171	15.6
1954	51	18	.35	9	1,402	15.2
1955	37	12	.32	6	959	15.0
1956	56	21	.38	9	1,409	15.0
1957	52	17	.32	4	538	15.0
1958	80	25	.31	4	550	15.2
1959	88	29	.33	14	2,123	15.0
1960	67	21	.31	5	793	15.0
1961	106	35	.33	7	1,037	15.0
1962	78	28	.36	13	1,940	15.0
1963	100	36	.36	7	1,070	15.0

2. United Kingdom

1953	37	13	.35	-	-	-
1954	21	8	.39	-	-	-
1955	14	5	.37	-	-	-
1956	30	12	.39	-	-	-
1957	40	13	.33	-	-	-
1958	69	21	.31	-	-	-
1959	48	14	.30	-	-	-
1960	52	16	.30	-	-	-
1961	86	28	.32	-	-	-
1962	45	15	.34	-	-	-
1963	82	29	.35	-	-	-

Table 42
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>3. United States</u>						
1953	30	8	.25	8	1,171	15.6
1954	29	9	.32	9	1,402	15.2
1955	22	6	.29	6	959	15.0
1956	25	9	.37	9	1,340	15.0
1957	10	3	.33	3	478	15.0
1958	10	3	.33	3	511	15.2
1959	40	14	.37	14	2,123	15.0
1960	15	5	.34	5	793	15.0
1961	20	7	.35	7	1,037	15.0
1962	33	13	.39	13	1,940	15.0
1963	18	7	.39	7	1,070	15.0

(a) Beginning in 1964 included in s.c. 404-99

Table 1

Exports: Zinc oxide, s.c. 8225^(a)

<u>Year</u>	<u>Quantity</u> cwt.	<u>Value</u> \$	Unit <u>Value</u> \$/cwt.
1954	23,798	271,112	11.39
1955	23,888	277,360	11.61
1956	10,694	142,505	13.33
1957	20,702	274,213	13.25
1958	29,604	383,721	12.96
1959	25,831	339,056	13.13
1960	14,450	186,834	12.93
1961	11,125	136,854	12.30
1962	35,011	425,414	12.15

(a) Not available prior to 1954. Beginning in 1961 renumbered as s.c. 402-21; beginning in 1963 included in s.c. 402-99

Table 2

Exports: Iron oxides, s.c. 8220^(a)

<u>Year</u>	<u>Quantity</u> cwt.	<u>Value</u> \$	Unit <u>Value</u> \$/cwt.
1953	60,955	359,886	5.90
1954	62,216	421,535	6.78
1955	72,460	448,363	6.19
1956	64,050	448,432	7.00
1957	68,805	397,484	5.78
1958	48,017	371,287	7.73
1959	52,487	400,700	7.63
1960	50,468	404,619	8.02
1961	44,163	376,169	8.52
1962	37,296	365,582	9.80
1963	44,370	432,158	9.74
1964	48,163	473,633	9.83
1965	55,905	505,192	9.04

(a) Beginning in 1961 renumbered as s.c. 402-40, "Iron oxides, natural or synthetic"; also includes part of s.c. 8230

Table 3

Exports: Cobalt oxides and cobalt salts, s.c. 8400^(a)

<u>Year</u>	<u>Quantity</u> lb.	<u>Value</u> \$	<u>Unit</u> <u>Value</u> \$/lb.
1953	932,499	1,900,399	2.04
1954	836,205	1,454,648	1.74
1955	1,640,282	2,894,284	1.76
1956	1,289,145	2,315,141	1.80
1957	620,042	1,102,902	1.78
1958	522,144	869,326	1.66
1959	1,100,734	1,577,503	1.43
1960	1,175,200	1,752,526	1.49
1961	1,521,000	2,106,608	1.39
1962	1,629,900	2,313,206	1.42
1963	1,098,300	1,508,328	1.37
1964	1,654,900	2,190,826	1.32
1965	1,414,200	1,959,713	1.39

(a) Beginning in 1961 renumbered as s.c. 402-46, "Cobalt oxides and hydroxides"; "cobalt salts" are included in various other statistical classes

Table 4

Exports: White lead, dry or in oil, s.c. 8240^(a)

<u>Year</u>	<u>Quantity</u> cwt.	<u>Value</u> \$	<u>Unit</u> <u>Value</u> \$/cwt.
1953	15	248	16.53
1954	110	2,018	18.35
1955	135	2,431	18.01
1956	147	3,424	23.29
1957	330	5,820	17.64
1958	13,243	221,261	16.71
1959	16,699	280,300	16.79
1960	21,778	375,709	17.25

(a) Not available after 1960

Table 5

Exports: Tungsten ore (tungstic oxide), s.c. 6577^(a)

<u>Year</u>	<u>Quantity</u> cwt.	<u>Value</u> \$	<u>Unit</u> <u>Value</u> \$/cwt.
1955	36,984	6,536,400	176.74
1956	33,150	6,207,026	187.24
1957	30,969	5,456,264	176.18
1958	10,283	2,073,068	201.60
1959-61	-	-	-

(a) Not available prior to 1955. Beginning in 1961 renumbered as s.c. 259-75, "Tungstic oxide in ores and concentrates"; beginning in 1962 included in s.c. 259-98

Table 6

Exports: Inorganic bases and metallic oxides, hydroxides and per-oxides n.e.s., s.c. 402-99^(a)

<u>Year</u>	<u>Quantity</u> cwt.	<u>Value</u> \$	<u>Unit</u> <u>Value</u> \$/cwt.
1960	..	2,335,602	..
1961	533,896	1,920,966	3.60
1962	543,270	1,905,641	3.51
1963	533,651	3,543,093	6.64
1964	460,257	5,243,282	11.39
1965	748,269	8,195,946	10.95

(a) Not available prior to 1960

Table 7

Exports: Aluminum chloride, s.c. 404-28^(a)

<u>Year</u>	<u>Quantity</u> cwt.	<u>Value</u> \$	<u>Unit</u> <u>Value</u> \$/cwt.
1963	20,701	228,863	11.06
1964	25,612	312,978	12.22
1965	32,225	384,820	11.94

(a) Not available prior to 1963

APPENDIX IIPrincipal Relevant Recommended Items

	<u>Goods Subject to Duty and Free Goods</u>	<u>B.P.</u>	<u>M.F.N.</u>	<u>G.T.</u>
R-7	208 - Argols Arsenic sulphides, natural Boric acid, crude natural Copper, crude precipitate of Sodium borates, crude natural, and concentrates thereof, calcined or not	Free	Free	Free
R-8	208g - Barium-cadmium complex, barium-silicon complex, calcium- magnesium complex, calcium- silicon complex; calcium molybdate, tungsten oxide, vanadium oxides, whether in powder, in lumps, or formed into briquettes by the use of a binding material; all the foregoing when for use in the manufacture of steel under such regulations as the Minister may prescribe	Free	Free	5
R-9	208k - Crude oxide of cobalt	Free	10	10
R-10	208t - Drugs, n.o.p., of a kind not produced in Canada	Free	15	25
R-12	210b - Sodium carbonates, natural	10	15	25
R-13	210d - Natural sodium sulphate	10	15	25
R-14	*211 - Bauxite, whether or not washed or calcined	Free	Free	Free
R-17	240 - Whiting or whitening; natural calcium sulphate, n.o.p.	Free	10	10
R-19	*295a - Wollastonite; natural zirconium silicate	Free	Free	Free
R-20	296b - (1) Magnesite, dead-burned or sintered, n.o.p.; magnesite, caustic calcined, n.o.p.; plastic magnesia, n.o.p. (2) Magnesium carbonate, basic or otherwise, excepting crude rock, n.o.p.	15 Free	15 15	30 25
R-21	296e - Magnesium oxide, or calcined magnesite, for use exclusively in the manufacture of electrical cables	Free	Free	Free

	<u>Goods Subject to Duty and Free Goods</u>	<u>B.P.</u>	<u>M.F.N.</u>	<u>G.T.</u>
R-24	*333 - Cinnabar	Free	Free	Free
R-25	*334 - Kryolite or cryolite, n.o.p.	Free	Free	Free
R-31	663b - Goods which enter into the cost of manufacture of fertilizers when imported for use exclusively in the manufacture of fertilizers	Free	Free	Free
R-32	*669 - Corundum, n.o.p., emery and garnet, in bulk, crushed or ground	Free	Free	Free
R-33	*671 - Artificial abrasive grains, other than chemically defined products, crushed or ground	Free	Free	Free
R-34	681d - Uranium depleted in U 235, in the form of pigs, ingots, billets, or bars; residues resulting from the processing abroad of uranium metal, salts or oxides	Free	Free	25
R-35	791 - Materials of all kinds for use in producing or manufacturing the products of Recommended Item 38.11, when imported exclusively for such use, whether or not otherwise enumerated in Schedule A, subject to such regulations as the Minister may prescribe	Free	Free	Free
R-36	Metals, n.o.p., not including alloys, in lumps, powders, ingots or blocks:			
	(1) Other than the following	Free	15	25
	(2) Cadmium	10	15	25
	(3) Cobalt	Free	10	25
	(4) Electrolytic manganese for alloying purposes	Free	Free	20
R-37	Natural oxides, n.o.p., not including ores of metals:			
	(1) Other than the following	Free	10	25
	(2) Antimony oxides	Free	12½	25
	(3) Copper oxides	Free	15	25
	(4) Manganese oxides	Free	Free	Free
	(5) Molybdenum oxides	10	15	25
	(6) Nickelous oxides	10	15	25
	(7) Tin oxides	Free	15	25
	(8) Zirconium oxide	Free	5	15
R-38	Calcined witherite (barium oxide)	Free	15	25

<u>Goods Subject to Duty and Free Goods</u>		<u>B.P.</u>	<u>M.F.N.</u>	<u>G.T.</u>
28.18	Oxides, hydroxides and peroxides, of strontium or barium; hydroxides and peroxides of magnesium; oxides of magnesium, howsoever produced, not less than 94 per cent pure			
	(1) Other than the following	Free	15	25
	(2) Magnesium oxide, howsoever produced, not less than 94 per cent pure	Free	Free	Free
28.19	Zinc oxide and zinc peroxide	Free	12½	25
28.20	Aluminum oxide and hydroxide; artificial corundum	Free	Free	Free
28.21	Chromium oxides and hydroxides			
	(1) Other than the following	Free	15	25
	(2) Chromic oxide	10	15	25
	(3) Chromium trioxide	10	15	25
28.22	Manganese oxides	Free	Free	Free
28.23	Iron oxides and hydroxides; earth colours containing 70% or more by weight of combined iron evaluated as Fe_2O_3			
	(1) Other than the following	10	15	25
	(2) Iron hydroxides	Free	15	25
28.24	Cobalt oxides and cobalt hydroxides:			
	(1) Cobalt hydroxides	Free	15	25
	(2) Cobalt oxides	Free	10	20
28.25	Titanium oxides	Free	12½	25
28.26	Tin oxides (stannous oxide and stannic oxide)	Free	15	25
28.27	Lead oxides; red lead and orange lead:			
	(1) Other than the following	Free	15	25
	(2) Red lead and orange lead	Free	12½	25
28.28	Hydrazine and hydroxylamine and their inorganic salts; other inorganic bases and metallic oxides, hydroxides and peroxides:			
	(1) Other than the following	Free	15	25
	(2) Antimony oxides	Free	12½	25
	(3) Molybdenum oxides	10	15	25
	(4) Nickelous oxide	10	15	25
	(5) Zirconium oxide	Free	5	15

<u>Goods Subject to Duty and Free Goods</u>		<u>B.P.</u>	<u>M.F.N.</u>	<u>G.T.</u>
28.29	Fluorides; fluorosilicates, fluoroborates and other complex fluorine salts:			
	(1) Other than the following	Free	15	25
	(2) Cupric fluoroborate	10	15	25
	(3) Lead fluoroborate	10	15	25
	(4) Potassium fluoroborate	10	15	25
	(5) Potassium titanium fluoride	10	15	25
	(6) Sodium fluoroaluminate (synthetic cryolite)	Free	Free	Free
	(7) Sodium fluoroborate	10	15	25
	(8) Stannous fluoroborate	10	15	25
28.30	Chlorides and oxychlorides:			
	(1) Other than the following	Free	15	25
	(2) Aluminum chloride	Free	10	20
	(3) Antimony chlorides and oxychlorides	Free	Free	Free
	(4) Bismuth oxychloride	10	15	25
	(5) Mercuric chloride, other than A.R. grade	10	15	25
	(6) Stannous chloride	Free	10	20
28.31	Chlorites and hypochlorites: —			
	(1) Other than the following	Free	15	25
	(2) Calcium hypochlorite	Free	5	10
	(3) Sodium hypochlorite	10	15	25
28.32	Chlorates and perchlorates:			
	(1) Other than the following	Free	15	25
	(2) Potassium chlorate	10	15	25
	(3) Sodium chlorate	Free	10	25
28.33	Bromides, oxybromides, bromates and perbromates, and hypobromites	Free	15	25
28.34	Iodides, oxyiodides, iodates and periodates:			
	(1) Other than the following	Free	15	25
	(2) Calcium iodate	10	15	25
	(3) Manganese iodide	10	15	25
	(4) Potassium iodide	10	15	25
	(5) Sodium iodide	10	15	25



Report by
THE TARIFF BOARD

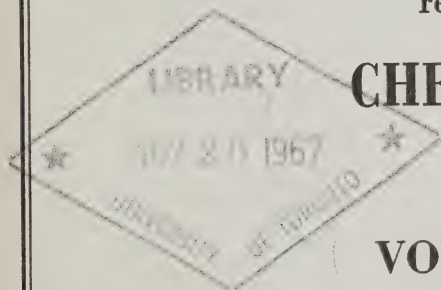
Relative to the Inquiry Ordered
by the Minister of Finance
respecting

CHEMICALS

VOLUME 7

INORGANIC CHEMICALS IN HEADINGS
25.32, and 28.35 to 28.58
OF THE BRUSSELS TARIFF NOMENCLATURE

Reference No. 120





Report by THE TARIFF BOARD

Relative to the Inquiry Ordered
by the Minister of Finance
respecting

CHEMICALS



VOLUME 7

INORGANIC CHEMICALS IN HEADINGS
25.32, and 28.35 to 28.58
OF THE BRUSSELS TARIFF NOMENCLATURE



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1967

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The Honourable Mitchell Sharp, P.C., M.P.
Minister of Finance
Ottawa

Dear Mr. Sharp:

I refer to Mr. Harris' letter of September 21, 1956 and to Mr. Fleming's letters of October 11, 1957 and December 21, 1959 in which the Tariff Board was requested to conduct an inquiry respecting chemicals.

In conformity with Section 6 of the Tariff Board Act, I have the honour to transmit Volume 7 of the Report of the Board, in English and in French. This volume contains the report on inorganic chemicals in Headings 25.32 and 28.35 to 28.58 of the Brussels Tariff Nomenclature. Further volumes will be forwarded to you as soon as they have been completed.

Yours sincerely,

A handwritten signature in dark ink, appearing to read "J. C. Audette", with a long, sweeping horizontal flourish extending to the right.

Chairman

Explanation of Symbols Used

- Denotes zero or none reported
- .. Indicates that figures are not available
- * In statistical tables, indicates a reported figure which disappears on rounding, or is negligible
- (a) A small letter in brackets denotes a footnote to a table
- (1) A number in brackets denotes a footnote to the text
- s.c. Denotes a Dominion Bureau of Statistics import or export statistical class

The sum of the figures in a table may differ from the total, owing to rounding

A Note on the Organization of the Report - Reference 120

The first four volumes of the Report by the Tariff Board respecting Reference 120, Chemicals, relate to the reference as a whole; the eleven volumes which follow (Volumes 5 to 15, inclusive) relate to the products which were the subject of the Board's inquiry. The principal subject matter of each of the volumes is given below in terms of the headings of the Brussels Tariff Nomenclature (B.T.N.). Occasionally, chemicals of different B.T.N. headings are dealt with together, for example, chlorine (28.01) and caustic soda (28.17); the more detailed tables of contents of the individual volumes indicate where this occurs.

To the extent that particular statistical tables could be related to specific products or B.T.N. headings they are included in the statistical appendix of the volume which deals with that product or heading. Some tables, which could be related only to broader groupings of chemicals, are included in the statistical appendix to the last volume dealing with such broader groupings: inorganic chemicals in Volume 7, organic chemicals in Volume 9 and artificial resins and plastics in Volume 15.

Because of the unprecedented amplitude and complexity of Reference 120 - Chemicals, many parts of Volumes 5 to 15 were written a considerable time before the first four volumes. This gives rise, occasionally, to apparent discrepancies, attributable to the passage of time, particularly between Volume 4 and those which follow.

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* The numbers shown after product designations are those used in the Brussels Tariff Nomenclature

SULPHIDES, DITHIONITES, SULPHITES, THIOSULPHATES AND SULPHATES
(B.T.N. Headings 28.35 to 28.38, Inclusive)

INTRODUCTION

This section of the report deals with sulphides, dithionites, sulphites, thiosulphates, sulphates and certain related compounds classified in the Brussels Tariff Nomenclature by headings 28.35 to 28.38 inclusive.

In total, sales of these products in Canada have an annual value of the order of \$15 million. For those chemicals of headings 28.35 to 28.38 produced in Canada, exports are larger than imports and are valued at about \$2 million annually. For chemicals of which there is no Canadian production, imports are valued at almost \$5 million annually. Chemicals of which there is no Canadian production constitute almost 80 per cent of total imports.

Although some fifty products came to the Board's attention in the course of its inquiries into this segment of the study, two of them account for about 60 per cent of the commercial value, inclusive of exports. These two chemicals are sodium sulphate and aluminum sulphate.

The chemicals classified in heading 28.38 (sulphates) constitute by far the most important products of the four headings here discussed. The available data are incomplete for many of the chemicals; the tabulation which follows indicates the relative importance of the chemicals for which data are available.

The Estimated Canadian Market for Known Chemicals
of B.T.N. Headings 28.35, 28.36, 28.37 and 28.38

	<u>Imports</u>	<u>Exports</u>	<u>Canadian Market</u>
	- thousand dollars -		
<u>Chemicals made in Canada</u>			
28.35	224	-	225(a)
28.36	-	-	-
28.37	269	-	600
28.38	<u>815</u>	<u>1,967</u>	<u>9,151</u>
Total	1,308	1,967	9,986
<u>Chemicals not made in Canada</u>			
28.35	219	-	219
28.36	2,087	-	2,087
28.37	199	-	199
28.38	<u>2,305</u>	-	<u>2,305</u>
Total	4,810	-	4,810

(a) Excludes small value of sales of sodium hydrogen sulphide

Source: D.B.S., Various publications; Canadian Minerals Yearbook; and others

The order of presentation in the following sections is that of the B.T.N. classification - sulphides (28.35), dithionites (28.36), sulphites and thiosulphates (28.37) and sulphates (28.38). Within each heading the products that are produced in Canada are dealt with first.

SULPHIDES, INCLUDING POLYSULPHIDES - B.T.N. 28.35

Sodium sulphide and molybdenum disulphide were the only chemicals of Brussels Tariff Nomenclature heading 28.35 that were the subject of formal submissions. Sodium hydrosulphide was referred to only briefly at the hearing in February 1961, although it is one of the important products of the heading. In addition, several products classified by heading 28.35 were the subject of various expressions of interest at later hearings, particularly those dealing with end-use items.

MOLYBDENUM DISULPHIDE

Molybdenum disulphide, one of the most important of the sulphides is valued largely for its molybdenum content and the economic aspects of its production and distribution are closely related to those of other molybdenum products. It is discussed under heading 28.28, along with molybdenum oxide.

SODIUM SULPHIDE

Sodium sulphide is not produced in Canada and all supplies are imported, almost all from the U.S.A.; the U.K. was the only other country of origin. In some years supplies have also been imported from Western Germany. In 1964 imports were 3.6 million pounds valued at \$213,000.

Imports of Sodium Sulphide by Principal Country of Origin, 1958-64

	<u>U.K.</u>			<u>U.S.A.</u>			<u>Total</u>		
	'000	lb.	\$ '000	'000	lb.	\$ '000	'000	lb.	\$ '000
1958	376		18	1,946		105	2,355		125
1959	284		13	2,319		123	2,602		136
1960	168		8	2,252		123	2,602		139
1961	326		17	3,494		199	3,841		218
1962	287		16	2,890		159	3,226		177
1963	97		6	2,628		160	2,763		168
1964	43		3	3,519		210	3,562		213

Source: D.B.S., Trade of Canada, Imports, s.c. 8364

The principal use of sodium sulphide, in Canada, is in the removal of hair on skins in the tanning of leather. The textile industry uses it in certain dyeing operations. The leather tanning industry accounts for about half the imports; the textile and chemical industries use most of the remainder.

Consumption of Sodium Sulphide, by Industry,
1957-62

	<u>Leather Tanning</u>	<u>Industrial Chemicals</u>	<u>Other</u> (a)	<u>Total Supply</u> (b)
		- thousand pounds -		
1957	1,714	238	1,377	3,329
1958	1,619	570	167	2,355
1959	1,219	433	950	2,602
1960	1,323	475	804	2,602
1961	1,551	531	1,759	3,841
1962	1,643	..	..	3,226

(a) By subtraction

(b) Total imports

Source: D.B.S., Various publications

Tariff Considerations

Sodium sulphide is entered under item 210 at Free, B.P., and 12½ p.c., M.F.N. Because most imports are from the U.S.A., the 12½ p.c. rate generally applies.

At the public hearing, in February 1961, the Primary Textiles Institute proposed that the product be entered free of duty under both the B.P. and M.F.N. Tariffs, until it is deemed to be made in Canada. When it is ruled to be made in Canada, rates of 15 p.c., B.P. and 20 p.c., M.F.N., were proposed.(1)

The Tanners Association of Canada also supported free entry for the product. However, its proposal was not qualified in any way.(2)

The Canadian Pulp and Paper Association opposed any increase in rates of duty pertaining to chemicals used by its members. Sodium monosulphide was included in a list of chemicals used by its members.(3)

No other representations were made relating specifically to sodium sulphide.

(1) Transcript, Vol. 24, p. 3501

(2) Same, Vol. 24, p. 3516

(3) Same, Vol. 85, p. 13005; Vol. 36, p. 5246

The Primary Textiles Institute and the Tanners Association supported their proposals on the grounds that the chemical was not produced in Canada and that the existing duty adds to their costs without benefiting other Canadian manufacturers.

The spokesman for the tanners said his industry exported about 20 per cent of its production of leather but that large amounts of leather were also imported. He strongly urged free entry under the B.P. and M.F.N. Tariffs, in order to assist low cost production of leather in Canada.

OTHER SULPHIDES AND POLYSULPHIDES

The Industry Committee's spokesman said that, to the best of the Committee's knowledge, all products of commercial importance were the subject of representations. The Committee proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., for all other chemicals classified by the heading. This was the general proposal by the Committee for products for which no specific representations were made.

The Canadian Pharmaceutical Manufacturers Association recommended rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for chemicals not made in Canada that are used in the production of pharmaceuticals, and rates of 15 p.c., B.P. and 20 p.c., M.F.N., for products ruled to be made in Canada.⁽¹⁾ The Association listed cadmium sulphide and potassium sulphide as relatively unimportant chemicals used by its members. Cadmium sulphide may be entered under item 208t at Free, B.P. and 15 p.c., M.F.N. or under item 246 at rates of 12½ p.c., B.P. and 17½ p.c., M.F.N. as a dry colour, n.o.p.; potassium sulphide is entered under item 208t, at rates of Free, B.P. and at 15 p.c., M.F.N.

The Consolidated Mining and Smelting Company of Canada Limited opposed any change in rates which would increase the costs of Canadian manufacturers.⁽²⁾ The company expressed an interest in iron sulphide imported by it from Britain. Iron sulphide (ferrous sulphide) is entered under tariff item 208t, Free, B.P. and 15 p.c., M.F.N.

The Canadian Federation of Agriculture urged free entry under both the B.P. and M.F.N. Tariffs, for all chemicals used in pesticides.⁽³⁾ The Federation indicated an interest in calcium polysulphide as one of these chemicals. If for use in the manufacture of pesticides, the chemical would be entered free of duty under item 791, or if used directly, which is less likely, it could be entered at rates of Free, B.P., 12½ p.c., M.F.N., under item 219a(1) (packages weighing three pounds or less) or otherwise free of duty, under both Tariffs, under item 219a(2). Imports of calcium polysulphide would be entered under item 208t, Free, B.P. and at 15 p.c., M.F.N., if not subject to end-use treatment.

(1) Transcript, Vol. 87, p. 13321

(2) Same, Vol. 5, p. 715

(3) Same, Vol. 110, p. 16631

One of the products for which no specific proposals were made, sodium hydrogen sulphide (sodium hydrosulphide), has significant economic importance. Cornwall Chemicals Limited informed the Board that it produced the product in relatively small quantities and sold it to only one customer. However, imports in 1963 were valued at \$190,000. Sodium hydrogen sulphide, not being ruled to be made in Canada, is entered under item 208t, at rates of Free, B.P. and 15 p.c., M.F.N.

No representations were made regarding sodium hydrogen sulphide, except for the general proposal of the Industry Committee. If the Industry Committee's general proposal were to apply, Canadian consumers might face an increase in the cost of the product. The chemical does not appear to be generally available from Canadian production and the available information indicates that imports supply most of Canada's commercial requirements, which are substantial.

Most of the chemicals referred to above are not manufactured in Canada and are entered under tariff item 208t, at rates of Free, B.P. and 15 p.c., M.F.N. The effect of the proposal by the Industry Committee for the residual heading provision would increase the B.P. Tariff from free entry to 15 p.c., and the M.F.N. rate from 15 p.c., to 20 p.c.

A number of naturally-occurring sulphides are excluded from B.T.N. heading 28.35, for example zinc blende and wurzite (natural zinc sulphides, greenockite (natural cadmium sulphide), stibnite and kermesite (natural antimony sulphides), molybdenite (natural molybdenum sulphide) and others. Many of the natural sulphides would be entered as ores of metals under item 329 or as unenumerated articles under item 711 of the Customs Tariff. The proposal to adopt an item like heading 28.35 would leave these products dutiable under items 329 or 711. Heading 28.35 relates only to products which are manufactured by chemical processes and excludes those which are produced by the processes usually used in concentrating ores.

DITHIONITES, INCLUDING THOSE STABILIZED WITH ORGANIC SUBSTANCES:
SULPHOXYLATES - B.T.N. 28.36

"Dithionites are the salts of dithionous ('hydrosulphurous') acid...they are obtained by reducing (with zinc powder) solutions of acid sulphites saturated with sulphur dioxide. They are reducing agents employed in the chemical, textile and sugar industries, mainly for bleaching." (1)

The spokesman for the Industry Committee said that the chemicals classified under this heading have limited commercial significance and that the committee knew only of sodium dithionite (sodium hydrosulphite) and zinc dithionite (zinc hydrosulphite) to be used in Canada. Both are used as bleaching agents, the former for textiles, the latter for pulp and paper.

(1) Explanatory Notes to the Brussels Nomenclature, 1955, Vol. 1, p. 188

Although most dithionites appear to have negligible commercial importance, two, sodium dithionite and zinc dithionite, are of economic significance. Imports of zinc dithionite increased rapidly in the late fifties but were valued at only about \$23,000 in 1959. The value of imports increased spectacularly thereafter and were \$635,000 in 1961, \$940,000 in 1962, and \$960,000 in 1963. In 1963, the 4.6 million pounds that were imported had an average value of 20.7 cents a pound. The U.S.A. and Britain have been the only suppliers. About two thirds of the imports in 1963 were from the U.S.A.

Zinc dithionite is not manufactured in Canada but in April 1964, a report indicated that a plant to manufacture zinc dithionite would be established at Cornwall, Ontario and was expected to be in operation by the end of the year.⁽¹⁾ The principal use of the product appears to be for the bleaching of pulp; at the time of the 1961 hearing, only B.C. pulp plants were known to use the chemical.

Data on imports of sodium dithionite are available only since 1961, when imports were valued at \$805,000. In 1962 the value rose to over \$1 million and in 1964 five million pounds valued at \$1.1 million were imported. Sodium dithionite (hydrosulphite) appears to be used mainly in the pulp and paper, synthetic rubber and textiles industries. It is also used to bleach sugar, soaps, oils, minerals and other materials.

Tariff Considerations

Apart from end-use considerations, the products classified in heading 28.36 of the B.T.N. would probably be entered under tariff item 208t, at rates of Free, B.P. and 15 p.c., M.F.N.; when stabilized with organic substances they would be entered under tariff item 220a(i) at rates of 15 p.c., B.P. and 20 p.c., M.F.N. Sodium dithionite, zinc dithionite, sodium formaldehyde sulphonylate and zinc formaldehyde sulphonylate are also known to be imported either under tariff item 851 or item 203a. Imports under tariff items 851 and 203a are entered free of duty under both the B.P. and M.F.N. Tariffs.

Polymer Corporation Limited expressed an interest in sodium dithionite (sodium hydrosulphite) and sodium formaldehydesulphonylate, and requested that free entry under both the B.P. and M.F.N. Tariffs be continued, in an end-use item like 851, for products for use in the manufacture of synthetic rubber.⁽²⁾

The Canadian Pulp and Paper Association listed sodium dithionite and zinc dithionite as raw materials used by its members and strongly opposed any increase in rates for chemicals used by the industry.⁽³⁾ The Association indicated that it expected the use of zinc dithionite by the pulp and paper industry to grow.

The Canadian Pharmaceutical Manufacturers Association listed sodium formaldehydesulphonylate as one of the relatively unimportant

(1) New York Journal of Commerce, April 14, 1964, p. 3

(2) Transcript, Vol. 24, p. 3498; Vol. 89, p. 13502

(3) Same, Vol. 85, p. 13006

chemicals used by its members. The Association proposed rates of Free, B.P., and 15 p.c., M.F.N., unless otherwise provided for, for chemicals used in pharmaceuticals, while they are not produced in Canada.⁽¹⁾

Nopco Chemical Canada Limited and its subsidiary, Canadian Aniline and Extract Company Limited, reported their interest in sodium dithionite, zinc dithionite, sodium formaldehydesulphoxylate and zinc formaldehydesulphoxylate, all of which they imported under item 203a, "chemical compounds composed of two or more acids or salts soluble in water, adapted for dyeing or tanning", free of duty under both the B.P. and M.F.N. Tariffs. The companies proposed that these products continue to be entered free of duty but were opposed to end-use treatment for chemicals.⁽²⁾

The Primary Textiles Institute informed the Board of its interest in sodium dithionite and sodium formaldehydesulphoxylate. In a letter dated December 14, 1960, the Institute urged that chemicals of importance to the textile industry should be free of duty if they are not "reasonably available from Canadian suppliers".⁽³⁾

Thus, four chemicals of heading 28.36 were the subject of expressions of interest: sodium dithionite, sodium formaldehydesulphoxylate, zinc dithionite and zinc formaldehydesulphoxylate. The proposals for these chemicals were either that the existing rates (usually of Free, B.P. and 15 p.c., M.F.N.) should not be increased, or more generally, that these products be free of duty under both the B.P. and M.F.N. Tariffs.

In general submissions, the Industry Committee urged that all products which were not the subject of proposals by others should be dutiable at uniform rates of 15 p.c., B.P. and 20 p.c., M.F.N., in an item worded like heading 28.36 of the B.T.N. "dithionites, including those stabilized with organic substances; sulphoxylates". This proposal was also intended to apply to imports which were not entered under end-use items.

As noted, except for products entered under special provisions at lower rates, the chemicals of heading 28.36 would generally be classified under item 208t at Free, B.P. and 15 p.c., M.F.N. Thus, the proposal of the Industry Committee would increase the B.P. rate substantially and narrow the margin of preference from the existing 15 percentage points for those chemicals for which no other submissions were made to the Board, apart from expression of end-use interest, to 5 percentage points.

The companies and trade associations which made proposals to the Board regarding specific chemicals of heading 28.36 supported their proposals on the grounds of cost. In general they took the position that duties on chemicals which they used in their processes increased their costs without giving any benefit to other Canadian manufacturers, because the products were not being produced in Canada.

(1) Transcript, Vol. 87, p. 13321

(2) Same, Vol. 96, p. 14523

(3) Same, Vol. 86, p. 13106-7

SULPHITES AND THIOSULPHATES - B.T.N. 28.37

Sodium metabisulphite, sodium bisulphite (sodium acid sulphite), sodium sulphite (sodium sulphite neutral) and sodium thiosulphate are dealt with separately in the discussion which follows. These are commercially the most important products of heading 28.37 of the Brussels Tariff Nomenclature. Sodium sulphite and sodium thiosulphate, other than anhydrous, are produced in Canada; the others are not. The two former chemicals are manufactured for sale only by Canadian Industries Limited (C.I.L.) at its plant at Hamilton, Ontario.

Interest was expressed in calcium thiosulphate and potassium metabisulphite, at later hearings of Reference 120, and the available data suggest that ammonium thiosulphate is of some commercial importance in Canada. No information is available regarding the other chemicals classified in heading 28.37. The commercial market value of all the products of heading 28.37 is estimated to be about \$800,000 annually; sodium metabisulphite, sodium bisulphite, sodium sulphite and sodium thiosulphate, together, have an estimated commercial market value of about \$750,000, nearly 95 per cent of the total.

SODIUM SULPHITE

Sodium sulphite (neutral) is sold in concentrations of about 50 per cent to 95 per cent of the sulphite. It is a strong reducing agent whose major use is in the manufacture of pulp and paper. It may be produced by the reaction of sulphur dioxide with either caustic soda (sodium hydroxide) or soda ash (sodium carbonate), as a co-product of the production of ammonium chloride, and as a by-product of the manufacture of synthetic phenol.

In Canada only one plant, that of Canadian Industries Limited, at Hamilton, produces the product for sale. C.I.L. uses the co-product process in which the chemicals are produced in a fixed ratio of 56 units of sodium sulphite to 44 units of ammonium chloride. For every ton of sodium sulphite produced, the company also produces 1,580 pounds of ammonium chloride. Three pulp and paper plants also produce sodium sulphite, captively. These plants use a process more economical for them, (1) in which sulphur dioxide is reacted with either caustic soda or soda ash. The sodium sulphite produced by these plants is not a saleable product because the raw materials are introduced during the cooking process and the sodium sulphite which occurs during the chemical reactions that ensue is never withdrawn and used as such.

The C.I.L. plant at Hamilton was built during World War II to provide a domestic source of five chemicals: sodium sulphite, ammonium chloride, sodium thiosulphate (sodium hyposulphite), zinc chloride and zinc ammonium chloride. Production is by a batch process.

C.I.L. supplies almost the total market in Canada for ammonium chloride, the co-product of sodium sulphite, in its process of

(1) Transcript, Vol. 24, p. 3562

manufacture. Imports of ammonium chloride in 1963 were only 16 tons; apart from the company's captive use, the Canadian market for the chloride is estimated to be about 2,000 tons annually.⁽¹⁾ Because the sulphite is produced in a fixed ratio to the chloride, the available market for the chloride tends to set a limit on the quantity of sodium sulphite produced, and vice versa.

Assuming that C.I.L. supplied the total Canadian use of ammonium chloride and did not export any of its output, it would produce only about 2,500 tons of sodium sulphite annually, compared with a total requirement of about 10,000 tons, in Canada. At the public hearing the C.I.L. spokesman said:

"Any attempt to supply the major bulk users of sodium sulphite would result in large and probably unsaleable quantities of ammonium chloride."⁽²⁾

Some of its output of ammonium chloride is used by C.I.L. to produce other chemicals, particularly zinc ammonium chloride, so that the plant would produce more than the 2,500 tons indicated above, although not appreciably more. Thus, it appears that the C.I.L. process of manufacturing severely limits the company's ability economically to expand its output of sodium sulphite.

Most of Canada's requirements of sodium sulphite are produced captively by pulp and paper plants. C.I.L. estimated the distribution of Canadian use in 1960 as follows:⁽³⁾

	<u>Per cent of total</u>
Semi-chemical pulp	77
Mineral separation	14
Production of sodium thiosulphate	4
Other uses	<u>5</u>
Total	100

The company is not in a position to sell the chemical in bulk and the bulk users, all of them pulp and paper mills, produce their own supplies or, as in the case of one major user, import their requirements. The outlets available to C.I.L. consist of its own captive use and the purchases for mineral separation and other uses which together account for some 25 per cent of Canadian consumption, according to the company's submissions.

In 1960, the pulp and paper industry consumed about 8,000 tons of sodium sulphite indicating a total use in Canada, of about 10,400 tons of the chemical. Thus the domestic market available to C.I.L. would be for some 2,500 tons annually, with a value of about \$175,000. The market is heavily concentrated in Ontario and Quebec; less than 10 per cent of the market was said to be outside these two provinces.

⁽¹⁾ See section dealing with Ammonium Chloride, B.T.N. heading 28.30

⁽²⁾ Transcript, Vol. 24, p. 3559

⁽³⁾ Same, Vol. 24, p. 3555

Imports of sodium sulphite in concentrations of 50 to 95 per cent are substantial and, in 1964, amounted to about 6,228 tons gross weight, valued at \$242,000. The sodium sulphite contained in these imports would be of the order of 5,000 tons. Most imports are from the U.S.A., but in some earlier years substantial quantities were imported from the U.K. Relatively small amounts have also been imported from Germany, and Belgium and Luxembourg. C.I.L. imports some sodium sulphite for resale.

Imports of Sulphite of Soda, by Country of Origin,
1957-64

	<u>U.K.</u>	<u>U.S.A.</u>	<u>Other</u>	<u>Total</u>	
		- tons -		tons	\$'000
1957	3,260	1,540	5	4,805	238
1958	858	3,655	10	4,523	206
1959	3,008	4,967	22	7,996	365
1960	1,517	5,715	33	7,265	312
1961	78	4,079	490	4,647	250
1962	85	4,919	496	5,500	275
1963	307	5,981	26	6,314	276
1964	104	6,108	16	6,228	242

Source: D.B.S., Trade of Canada, Imports, s.c. 8365

The spokesman for C.I.L. said that the material imported from Britain contained 83 per cent sodium sulphite. The product from the U.S.A. was usually of either 50 per cent or 80 per cent strength with some also of a 94 to 95 per cent concentration.⁽¹⁾ He estimated that the 7,996 tons imported in 1959 would be equivalent to only 6,500 tons of anhydrous sodium sulphite.

The bulk of imports was said to be for the use of one pulp and paper mill, located near Sherbrooke, Quebec. This mill exports the products into the production of which the chemical enters and is therefore entitled to a 99 per cent drawback of duty. The imported sodium sulphite used in the plant is a by-product of synthetic phenol production.

Most imports, about three quarters of the total, are entered in Quebec, probably mainly for the use of this plant. Sixteen to eighteen per cent of imports are entered in British Columbia and almost all of the remainder are entered in Ontario. Thus about 90 per cent of imports are for use either in the pulp plant near Sherbrooke, or on the west coast and Alberta, a very considerable distance from the plant at Hamilton. From Hamilton, the cost of freight to the west coast is \$3.35 a hundredweight compared with the average value of imports entered into B.C. from the U.S.A. of \$3.53 a hundredweight, in 1963.

(1) Transcript, Vol. 24, p. 3568

Tariff Considerations

Sodium sulphite is entered under tariff item 210 at Free, B.P. and $12\frac{1}{2}$ p.c., M.F.N. At the public hearing in February 1961, C.I.L. proposed that it be dutiable at 15 p.c., B.P. and 20 p.c., M.F.N.(1)

The Canadian Pulp and Paper Association(2) and the Consolidated Mining and Smelting Company of Canada Limited(3) opposed any increase in the existing rates.

The Canadian Pharmaceutical Manufacturers Association listed sodium sulphite as a relatively unimportant chemical used by its members and recommended rates of 15 p.c., B.P. and 20 p.c., M.F.N., for chemicals made in Canada and imported for use in pharmaceuticals.(4)

Polymer Corporation expressed an interest in the chemical and requested continuation of free entry, under all Tariffs, in an end-use item relating to chemicals for use in the production of synthetic rubber.(5) This provision is at present contained in item 851.

Thus the producer of sodium sulphite, C.I.L., was supported by the Pharmaceutical Manufacturers in its proposal for 15 p.c., B.P. and 20 p.c., M.F.N.; the Pulp and Paper Association, Cominco and Polymer urged either that the existing rates under item 210 be continued or that the chemical be entered free of duty under an end-use item.

C.I.L. supported its rate proposal mainly on the grounds that the higher rates and therefore higher costs of the product would be more likely to induce bulk users to undertake captive production of sodium sulphite. This, it was argued, would provide C.I.L. with a larger market for sulphur dioxide, an essential raw material, and perhaps for caustic soda which the company also produces for sale. C.I.L. is the only merchant-producer in Canada of sulphur dioxide and undersells U.S. competitors by a wide margin.(6) The company spokesman said:

"Our position is this...Let us say the situation at Bathurst six months from now indicates the adoption of the sodium sulphite process...what we say in these circumstances is that they will be a good deal more likely to produce this material themselves at Bathurst on the basis of the 20 per cent duty...than they would if it were $12\frac{1}{2}$ per cent. In other words, they would be more likely to buy our SO₂ sulphur dioxide than import American sodium sulphite."(7)

(1) Transcript, Vol. 24, p. 3560

(2) Same, Vol. 24, p. 3587

(3) Same, Vol. 5, p. 715

(4) Same, Vol. 87, p. 13278

(5) Same, Vol. 89, p. 13587

(6) See section dealing with Sulphur Dioxide, B.T.N. heading 28.07

(7) Transcript, Vol. 24, p. 3585

Although C.I.L. made reference to competition from by-product sodium sulphite from the U.S.A., the emphasis was placed on the effect of the tariff in increasing the pressure on large consumers to enter into captive production of sodium sulphite. The company spokesman indicated that C.I.L. could not undertake to supply large consumers because the C.I.L. process would result in a large, additional output of the co-product ammonium chloride which would be largely or wholly unsaleable.(1) He also said that "it is of some significance...that in addition to being producers we are also importers for distribution."(2)

The company stated that about three quarters of the imports would not be affected by its proposal because these imports are entitled to a 99 per cent drawback of duty. Moreover, a duty of 20 p.c. would be insufficient to offset the freight disadvantage of C.I.L. in British Columbia. Thus, an increase in rates, of the magnitude proposed by C.I.L., is likely to affect less than 600 tons or 10 per cent of imports. However, consumers of imported sodium sulphite who were not entitled to duty-drawback would incur higher costs if they were using imported material or if C.I.L. increased its price to them as a result of the increased duty. Some of these would not be using enough of the product to warrant undertaking captive production.

As the company indicated, larger consumers might well enter into production of sodium sulphite; smaller consumers could be subjected to higher costs. In this connection, the following exchange occurred during the hearing:

Q. "But if we encourage by a high tariff all these gentlemen bulk consumers to make their own, where will you C.I.L. be?

A. "Well, sir, there are still quite a lot of people who will not find it economic or desirable to make their own, quite a large number of customers..."(3)

The companies and trade associations which opposed the proposal of C.I.L. based their opposition on the effect of higher rates of duty on their costs. In its presentations, the Consolidated Mining and Smelting Company (Cominco) repeatedly emphasized its dependence on export markets. The company also made several references to the special position of manufacturers located in British Columbia. Cominco spokesmen pointed out that the production of many chemicals was concentrated in Quebec and Ontario and could be delivered in B.C. only at a relatively high cost. Because of freight costs, B.C. consumers frequently found it cheaper to purchase such materials from nearby producers in the U.S.A., although at costs increased by the duties.(4)

Polymer Corporation also emphasized its position as an exporter of a substantial proportion of its production and the importance of being able to purchase raw materials at the lowest possible cost.

(1) Transcript, Vol. 24, p. 3559, 3561

(2) Same, Vol. 24, p. 3574

(3) Same, Vol. 24, p. 3573

(4) Same, Vol. 5, p. 715

A similar position was taken by the Canadian Pulp and Paper Association. The Association's spokesman said that many chemicals were used by its members in relatively small quantities. However, pulp and paper plants used a great many chemicals and an increase in the overall rates of duty would have a serious impact on their costs, although the effect of the additional cost of individual chemicals might not be great.

SODIUM THIOSULPHATE

Sodium thiosulphate (sodium hyposulphite) occurs either as fine anhydrous crystals, or as larger hydrated crystals. The two forms are identical except for the water of crystallization contained in the latter (the pentahydrate). The anhydrous form is produced by additional processing of the hydrated crystals and contains 1.56 times the amount of sodium thiosulphate per unit of weight.

In Canada, only one plant produces sodium thiosulphate, that of C.I.L. at Hamilton, Ontario, where only the hydrated crystals are produced. Sodium thiosulphate is produced by the reaction of sodium sulphite with sulphur and water. C.I.L. also produces sodium sulphite at the Hamilton plant. Though the cost of converting sodium thiosulphate to the anhydrous form was said to be high, the difference in the prices in the U.S.A. of the two forms represents only the difference in the amount of the chemical present and not higher processing costs.

The spokesman for C.I.L. estimated Canadian requirements to be about 1,000 tons, anhydrous equivalent, annually. This amount of product would be valued at about \$150,000 at the then current price, in the U.S.A. He also estimated that 40 per cent of the Canadian consumption was used for processing films and photographic papers, 34 per cent for leather tanning and 24 per cent for neutralizing excess chlorine in various other processes. Two per cent of use was unaccounted for. The spokesman estimated that more than 90 per cent of consumption occurred in Ontario and Quebec.

Although the two forms of sodium thiosulphate have identical chemical properties and can be used interchangeably, the anhydrous form was said to be preferred for use in photographic processes. This preference exists because the anhydrous form consists of smaller particles, and is much more concentrated than the hydrated form. Both of these properties affect the bulk that is required for use. The smaller bulk, moreover, would be reflected in lower costs of freight.

When questioned about this preference, the C.I.L. spokesman replied:

"there is a very definite advantage when one is repackaging to package the concentrated form. There is also the advantage to the user in not having to deal with...such large quantities...Storage by the retailer is a factor, and for the individual user there is the convenience of having his requirements in a relatively small package rather than a bigger package. ...I think...that the answer in essence is that the user in many cases finds it just more convenient to

use the anhydrous form than the pentahydrate form, and is willing to pay a price differential."(1)

In recent years imports supplied a fairly substantial part of Canadian use. On the basis of an annual use of about 1,000 tons, anhydrous equivalent, imports in the five years, 1959 to 1963, have varied between approximately 15 and 35 per cent of Canadian use.

Imports of Hyposulphite of Soda (Sodium Thiosulphate),
by Country of Origin, 1958-63

	<u>U.K.</u>	<u>France</u> tons	<u>U.S.A.</u>	<u>Total</u> tons	<u>\$ '000</u>
1958	194	11	238	456(a)	46(a)
1959	67	121	188	376	35
1960	106	-	91	197	18
1961	68	5	127	201	21
1962	21	145	129	295	35
1963	11	83	138	232	27

(a) Includes 12 tons, valued at \$1,876, from West Germany

Source: D.B.S., Trade of Canada, Imports, s.c. 8356

C.I.L. informed the Board that most imports from the U.S.A. were of the anhydrous form and that those from Britain were of the pentahydrate. The average value of imports and the rate of duty applied to them suggest that, except in 1959 and 1963, imports from France were largely of the anhydrous product.

An examination of the average rates of duty applied to imports, suggests that imports under end-use item 728, for use in tanning leather, were largely from Britain and France.

In 1962 and 1963, about two thirds of the imports were entered in Quebec; the remainder was divided about equally between Ontario and British Columbia. Imports from the U.K. were entered almost entirely in British Columbia; imports from France were entered only in Quebec, and imports from the U.S.A. were divided among the three provinces.

(1) Transcript, Vol. 24, p. 3609

Imports of Sodium Thiosulphate,
by Province of Entry and Country of Origin, 1962 and 1963

	<u>Quebec</u>	<u>Ontario</u>	<u>B.C.</u>	<u>Total</u>
	- tons gross weight -			
<u>1962</u>				
France	145	-	-	145
U.K.	3	-	18	21
U.S.A.	<u>62</u>	<u>40</u>	<u>27</u>	<u>129</u>
Total	210	40	45	295
<u>1963</u>				
France	83	-	-	83
U.K.	-	-	11	11
U.S.A.	<u>59</u>	<u>43</u>	<u>36</u>	<u>138</u>
Total	142	43	47	232

Source: Dominion Bureau of Statistics, s.c. 8356

Tariff Considerations

Sodium thiosulphate (hyposulphite) is entered under tariff items 208t, 711 and 728. The anhydrous form is entered under item 208t at Free, B.P. and 15 p.c., M.F.N.; the hydrated crystals are entered under item 711, at rates of 15 p.c., B.P. and 20 p.c., M.F.N., and either form may be entered under end-use item 728 at Free, B.P. and 10 p.c., M.F.N., "when imported by tanners for use in their own factories, in the tanning of leather".

At the public hearing in February 1961, C.I.L. proposed that end-use item 728 be deleted and that all forms of sodium thiosulphate be entered under one item at rates of 15 p.c., B.P. and 20 p.c., M.F.N. (1)

The company spokesman said:

"The tanners of leather in Canada are so situated that it is most economical for them to purchase most of their supplies of sodium thiosulphate from the company. Tariff item 728 is, therefore, not used to any great extent by tanners, and could be eliminated without causing any hardship." (2)

The Tanners Association of Canada opposed deletion of item 728. (3)

(1) Transcript, Vol. 24, p. 3592

(2) Same, Vol. 24, p. 3592

(3) Same, Vol. 95, p. 14418

The Canadian Pharmaceutical Manufacturers Association expressed an interest in sodium thiosulphate. The Association recommended rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for chemicals used in the manufacture of pharmaceuticals, while they are not made in Canada, and rates of 15 p.c., B.P. and 20 p.c., M.F.N. for such chemicals when they are ruled as made in Canada.(1)

The C.I.L. spokesman claimed that the anhydrous and hydrated forms are directly competitive with each other and are essentially the same chemical. For these reasons he urged that there was no justification for them to be subject to separate tariff classifications or different rates of duty. The effect of the C.I.L. proposals are shown below.

		<u>Existing Rates</u>		<u>Proposed Rates</u>	
		<u>B.P.</u>	<u>M.F.N.</u>	<u>B.P.</u>	<u>M.F.N.</u>
<u>Sodium thiosulphate</u>	<u>Item</u>				
Hydrated form	711	15 p.c.	20 p.c.	15 p.c.	20 p.c.
	728	Free	10 p.c.	15 p.c.	20 p.c.
Anhydrous form	208t	Free	15 p.c.	15 p.c.	20 p.c.
	728	Free	10 p.c.	15 p.c.	20 p.c.

The principal effect of C.I.L.'s proposal would be to increase the rate of duty for imports from the U.K. Under the proposal, imports of both anhydrous and pentahydrate forms from the U.K., under item 728, would be subject to an increase in duty from Free to 15 p.c., and imports from the U.K. of the anhydrous form under item 208t, from Free to 15 p.c. The effect of the proposal on the M.F.N. rates would be less; imports of the pentahydrate under item 728 would be subject to an increase in the rate of duty from 10 p.c. to 20 p.c., and imports of the anhydrous form would become dutiable at 20 p.c. instead of 15 p.c.

C.I.L. supported its rate proposals on the grounds that domestically produced sodium thiosulphate is readily available to most users in Canada and that the tariff is required to secure for the company a substantial share of the market.

C.I.L. now supplies about three quarters of Canadian requirements of sodium thiosulphate. The total market requirements are for about 1,000 tons, with a value of about \$150,000 and imports in recent years (1960-63) have averaged 230 tons valued at \$25,000 annually. The U.S.A. supplied an average of 121 tons annually, in this period, most imports from the U.S.A. being of the anhydrous form and being dutiable at 15 p.c., under tariff item 208t. Under C.I.L.'s proposal these imports would be dutiable at 20 p.c. In view of the advantages of using the anhydrous form, which C.I.L.'s spokesman cited at the hearing(2), it is very doubtful whether an increase in the M.F.N. duty by 5 percentage points would have any significant effect on the volume of these imports.

(1) Transcript, Vol. 87, p. 13321

(2) Same, Vol. 24, p. 3609

The principal effect of deleting item 728 and making all imports of both forms of sodium thiosulphate subject to rates of 15 p.c., B.P. and 20 p.c., M.F.N., is likely to be on imports from Britain. In recent years imports from Britain have declined sharply, from 106 tons in 1960 to only 11 tons in 1963, with a value of less than \$1,000. Imports, in total, under tariff item 728 are relatively small, according to statements by the C.I.L. spokesman. Thus, the elimination of this item would, on the basis of the present volume of imports, make a negligible contribution to the volume of sales of the company. However, because C.I.L. must price its sales to tanners so that they are competitive with duty-free imports from Britain under item 728, the deletion of this item would allow C.I.L. to increase its prices to tanners. Purchases of sodium thiosulphate by tanners are valued at about \$45,000 annually.

If C.I.L. were to replace all imports from countries other than the U.S.A. the total potential gain in sales to the company would be of the order of 100 tons annually, valued at about \$9,000. C.I.L. can expand its sales significantly, at the expense of imports, only by also displacing imports of the anhydrous form, mainly from the U.S.A., a form which the company is not producing. Imports of the anhydrous form from M.F.N. countries, particularly the U.S.A., probably accounted for at least 75 per cent of all imports in 1963, and would be entered almost entirely under tariff item 208t, at 15 p.c. In view of the statements made by the C.I.L. spokesman regarding the willingness of consumers to pay a premium in order to obtain the advantages of the anhydrous form, (1) it is doubtful whether an increase of duty from 15 p.c. to 20 p.c. would induce purchasers to buy the hydrated material from C.I.L.

Thus it appears that even if the proposals of C.I.L. were implemented, the company is likely to gain only a small increment in sales. Consumers in British Columbia and other areas distant from Hamilton would probably continue to import and thus would incur higher costs. The implementation of the proposals might enable C.I.L. to increase the price of sodium thiosulphate to tanners and to obtain a higher realization on annual sales of about \$45,000.

The proposal of the Tanners Association of Canada, relating to end-use item 728 was expressed in the following terms:

"This Association proposes that the Tariff items listed below be retained in the Canadian Customs without any change that would result in an increase in the rates of duty applicable to the materials imported under such items by or for the tanning industry." (2)

Item 728 was included in the list.

At a hearing in October 1962, the Association's spokesman supported its proposal by referring to the highly competitive position of the tanning industry both in the domestic and export markets. He said:

(1) Transcript, Vol. 24, p. 3609

(2) Same, Vol. 95, p. 14418

"The imposition of duties on important raw materials would have an adverse effect on our ability to compete with foreign tanneries...the industry is now subject to important competition from other countries and can ill afford to absorb the increased costs that would arise if tariffs were imposed on essential raw materials."(1)

The Canadian Pharmaceutical Manufacturers Association listed sodium thiosulphate as one of the relatively unimportant chemicals used by its members. The Association proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., for chemicals used in the manufacture of pharmaceuticals and ruled to be produced in Canada.(2) Its spokesman did not indicate why the proposed rates would be appropriate specifically for sodium thiosulphate.

SODIUM METABISULPHITE AND SODIUM BISULPHITE

Sodium metabisulphite and sodium bisulphite (sodium acid sulphite) are very closely related. The metabisulphite is the chief constituent of the commercial dry sodium bisulphite, with which most of its properties and uses are identical. Because of this similarity of properties and use, the designation "sodium bisulphite" is frequently applied to both chemicals. The principal difference between them is that the metabisulphite contains 67.4 per cent sulphur dioxide and the bisulphite, 61.5 per cent. Both chemicals are valued principally as convenient sources of sulphur dioxide.

Sodium bisulphite was manufactured in Canada by Canadian Industries Limited until 1958. Since that time neither product has been made in Canada and all commercial supplies have been imported, mainly from Britain, Germany and the U.S.A. In 1963, combined imports of the two products exceeded three million pounds and were valued at almost \$150,000. About half the imports were from the U.S.A. In 1964, imports were about one-half those of 1963, and consisted only of sodium bisulphite.

The Canadian market for these products has been increasing steadily in recent years and since 1959 imports have risen by more than 50 per cent. After C.I.L. ceased production in 1958 and until 1961, Britain was the largest supplier of the Canadian market. However, imports from Germany and the U.S.A. increased, and by 1962 the U.S.A. was supplying about one-half the total imports and imports from Germany exceeded those from Britain.

Sodium bisulphite and metabisulphite are used mainly as preservatives and bleaching agents. Their principal uses are in tanning, foods, textiles, pulp and paper, photography, and agriculture.

Both chemicals are much more expensive sources of sulphur dioxide than liquid sulphur dioxide purchased in tank cars. In the U.S.A., sodium metabisulphite has been priced at five cents a pound, f.o.b. works, in carload lots, since 1956. At this price the sulphur dioxide contained in the metabisulphite would cost almost \$75 a ton, three times the cost per ton of liquid sulphur dioxide, f.o.b.

(1) Transcript, Vol. 95, p. 14435-6

(2) Same, Vol. 87, p. 13321

the Canadian plant. The bisulphite is a slightly more expensive source of sulphur dioxide than the metabisulphite. However, both the bisulphite and the metabisulphite are more easily stored and shipped than sulphur dioxide and are more convenient for small or irregular use.

Imports of Sodium Bisulphite and Sodium Metabisulphite,
by Country of Origin, Selected Years, 1953-64

	<u>U.K.</u>	<u>Germany</u>	<u>U.S.A.</u>	<u>Total</u>	
	- thousand pounds -			'000 lb.	\$ '000
1953	162	-	248	410	18
1955	253	35	1,005	1,293	59
1957	257	42	490	793	37
1959	1,074	396	567	2,036	99
1961	847	758	772	2,377	115
1962	443	624	1,453	2,532	128
1963	648	846	1,627	3,165	148
1964 (a)	14	206	1,348	1,569	77

(a) Sodium bisulphite only

Source: D.B.S., Trade of Canada, Imports, s.c. 8349

Most of the imports from Germany and the U.S.A. are dutiable, indicating that most consumption is for other than agricultural use for which duty-free entry is provided. Because imports from the U.K. are entered free of duty under both relevant tariff items, it is not possible to separate the agricultural from other uses of the product imported from Britain.

Dutiable Imports of Sodium Bisulphite and Sodium Metabisulphite
as a Percentage of Total Quantity Imported,
by Country of Origin, 1958-63

	<u>U.K.</u>	<u>Germany</u>	<u>U.S.A.</u>
	- per cent of imports dutiable -		
1958	-	100.0	52.4
1959	-	88.2	43.6
1960	-	78.7	59.8
1961	-	84.2	90.8
1962	-	74.2	92.8
1963	-	76.4	100.0

Source: Computed from D.B.S. data

Tariff Considerations

Sodium bisulphite and sodium metabisulphite may be entered under tariff items 210 and 409f; the latter item is not part of Reference 120.

	<u>British Preferential Tariff</u>	<u>Most- Favoured- Nation Tariff</u>
<u>Item 210 (in part)</u>		
...bisulphite and stannate of soda		
...and sulphite of soda.....	Free	12½ p.c.
<u>Item 409f (in part)</u>		
...Sodium metabisulphite...for use on the farm for farm purposes only.....	Free	Free

The available data suggest that most imports are entered under item 210.

At the public hearing in February 1961, Imperial Chemical Industries Limited, of England, urged continuation of the existing rates under item 210 until the chemicals were made in Canada.(1) I.C.I. did not specify what rates should apply when the products were ruled as made in Canada. No mention was made, either by I.C.I. or others, of tariff item 409f which is not within the scope of this Reference.

William Blythe and Company Limited, also of England, supported the proposal of I.C.I.(2)

The Primary Textiles Institute proposed free entry under both the B.F. and M.F.N. Tariffs, until the products were ruled to be produced in Canada.(3)

The Canadian Pulp and Paper Association expressed its interest in sodium bisulphite, mainly in anticipation of substantial use in the future. The Association urged that there be no increase in rates for chemicals used by that industry.(4)

Naugatuck Chemicals Division of Dominion Rubber Limited listed sodium metabisulphite as a chemical in which the company had an interest. The nature of this interest was not specified with respect to sodium metabisulphite, nor with respect to other chemicals that were not produced in Canada.(5)

(1) Transcript, Vol. 24, p. 3526

(2) Same, Vol. 24, p. 3539

(3) Same, Vol. 24, p. 3542

(4) Same, Vol. 24, p. 3548

(5) Same, Vol. 6, p. 900

The Canadian Pharmaceutical Manufacturers Association listed sodium hydrogen sulphite (sodium bisulphite) and sodium metabisulphite as relatively unimportant chemicals used by its members. The Association proposed free entry under the B.P. Tariff and 15 p.c., under the M.F.N. Tariff, unless otherwise provided for, for chemicals not produced in Canada and used for the manufacture of pharmaceutical products.⁽¹⁾

Thus there were three rate proposals placed before the Board. I.C.I. and the William Blythe Company urged rates of Free, B.P. and 12½ p.c., M.F.N.; the Pharmaceutical Manufacturers proposed rates of Free, B.P. and 15 p.c., M.F.N.; and the Primary Textiles Institute urged free entry under both the B.P. and M.F.N. Tariffs. The pulp and paper producers opposed increased rates but did not specify the rates which they considered appropriate; Naugatuck took no issue with the existing rates or those proposed.

Neither I.C.I. nor the William Blythe Company indicated why the existing rates under item 210 should be continued, though both companies made reference to maintenance of the British preference.

The consumers of sodium bisulphite and sodium metabisulphite said that duties on these chemicals would add to their costs and make them less able to compete in both domestic and foreign markets with the products into whose use the chemicals enter. Their general theme was that these products were available to foreign manufacturers at a lower cost and that Canadian manufacturers who used these chemicals were therefore at a disadvantage relative to foreign competition because of the Tariff.

OTHER SULPHITES AND THIOSULPHATES

The Canadian Federation of Agriculture listed calcium thio-sulphate as a chemical used in pesticides and proposed that pesticides and materials for the manufacture of pesticides be entered free of duty.⁽²⁾ When imported for these purposes the chemical could be entered under items 791 or 219a(1) and 219a(2). Item 219a(2) applies to packages weighing more than three pounds, with free entry under both the B.P. and M.F.N. Tariffs; tariff item 791 provides free entry for materials used in the manufacture of pesticides. The product would otherwise be entered under item 208t, at Free, B.P. and 15 p.c., M.F.N.

The Canadian Pharmaceutical Manufacturers Association listed potassium metabisulphite as a relatively unimportant chemical used by its members and proposed that, unless otherwise provided for, chemicals used for the manufacture of pharmaceuticals be entered free of duty, B.P. and 15 p.c., M.F.N., when not made in Canada, and at rates of 15 p.c., B.P. and 20 p.c., M.F.N., when ruled to be made in Canada.⁽³⁾ Potassium metabisulphite is now entered under item 208t at Free, B.P. and 15 p.c., M.F.N.

(1) Transcript, Vol. 87, p. 13278

(2) Same, Vol. 110, p. 16631

(3) Same, Vol. 87, p. 13321

No representations were made to the Board specifically related to any other chemicals classified under heading 28.37 of the B.T.N. The Industry Committee proposed that these should be dutiable at rates of 15 p.c., B.P. and 20 p.c., M.F.N., in a tariff item worded like heading 28.37.⁽¹⁾ The Committee did not indicate why these rates were appropriate specifically for the chemicals that might be included. It is probable that most of the chemicals, to which these rates would apply, are not made in Canada and would now be entered under item 208t, Free, B.P. and at 15 p.c., M.F.N. For these the principal effects of the Committee's proposal would be to increase the B.P. rate from free entry to 15 p.c., and to reduce the margin of British preference from 15 percentage points to 5 percentage points.

SULPHATES (INCLUDING ALUMS) AND PERSULPHATES - B.T.N. 28.38

INTRODUCTION

The products classified under heading 28.38 of the Brussels Tariff Nomenclature are of considerable economic importance, even though the most important commercial sulphate, ammonium sulphate, is excluded in the B.T.N. from this heading and is classified with fertilizers of heading 31.02. Canadian shipments of the other sulphates are valued at about \$10 million annually, of which about \$2 million are for export. Imports of those products which are made in Canada are estimated at about \$800,000 annually; total imports are valued at approximately \$3 million. The Canadian market for the chemicals of heading 28.38 is about \$11.5 million annually.

With the exclusion of ammonium sulphate, two chemicals of the group dominate the commercial trade, namely, aluminum sulphate and sodium sulphate. These two chemicals account for about 70 per cent of Canadian market requirements and all of the known exports, but for only 25 per cent of the imports. Nearly 75 per cent of all imports is accounted for by chemicals not produced in Canada.

Commercial Importance of Chemicals of B.T.N. Heading 28.38

	<u>Made in Canada</u>	<u>Not Made</u>	<u>Total</u>
	- thousand dollars -		
Shipments	10,303	-	10,303
Imports	815	2,305	3,120
Exports	1,967	-	1,967
Commercial Market in Can.	9,151	2,305	11,456

The products known to be made in Canada were generally the subject of formal submissions and, as indicated above, account for more than 80 per cent of the value of the chemicals involved. These products are dealt with first below, in alphabetical order. The second part of the presentation deals, in alphabetical order of the products, with chemicals that are not known to be produced in Canada. Although

⁽¹⁾ Transcript, Vol. 24, p. 3521

some of these have a considerable economic importance, the interest expressed in them was frequently by trade associations whose members would account for only a small part of the known imports.

ALUMINUM SULPHATE

The Product and the Industry

Aluminum sulphate is available commercially either in a dry form or as a liquid. The chemical is sold in two grades, commercial and iron-free, but only the commercial grade is available in both the dry and the liquid forms; the iron-free grade is available only in the dry form. The dry form is supplied in various degrees of fineness, such as powder, ground, rice or lump. The degree of concentration of the chemical is given in terms of aluminum oxide equivalence. The liquid is usually equivalent to an 8.3 per cent solution of aluminum oxide; the solid is either 14 per cent or 17 per cent aluminum oxide. In North America the 17 per cent strength is the most common; in the United Kingdom both the 14 per cent and 17 per cent strengths are commonly sold.

Aluminum sulphate is produced by treating bauxite ores with sulphuric acid. The dry product is obtained by evaporating the water from the resulting liquid until a concentration of 17 per cent aluminum oxide equivalent is obtained. On cooling, the resulting liquid forms a solid (alum cake). The solid is usually broken up and ground.

The dry form is cheaper to transport because it has approximately double the concentration of the chemical. However, use of the liquid form, which is of a standard concentration, obviates the necessity of making a standard solution from the dry form. The liquid can be pumped directly from tank cars or trucks into storage tanks and then to the point of use, without handling and with more precise control. So considerable are the advantages of the liquid form that a growing volume of sales are in this form; in consequence, the generally smaller plants for producing the liquid are being erected near major consuming areas to avoid the relatively high costs of freight.

Aluminum sulphate has been produced in Canada since late 1946, when the Aluminum Company of Canada (Alcan) began production at Arvida, Quebec. A few months later, in 1947, Nichols Chemical Company Limited, a wholly-owned subsidiary of Allied Chemical Canada Limited, began to manufacture the product at Valleyfield, Quebec. Both plants produced only the dry form; in 1958 the Valleyfield plant began to produce the liquid form as well.

Nichols operates three other plants in Canada. In 1956, it established a plant which produces only the liquid form, at Thorold, Ontario; in 1957 it established plants at Port Arthur, Ontario and Vancouver, British Columbia. The former produces only the liquid form; the latter produces both the dry and the liquid forms.

At the time of the hearing, in February 1961, these were the only plants producing for sale. In addition, the Consolidated Paper Corporation Limited produced aluminum sulphate captively, at Three Rivers, Quebec.

Since the hearing Allied Chemical established plants at Dalhousie, New Brunswick and Ansonville, Ontario. The company also announced in 1965 that it was doubling the capacity of the plant at Port Arthur. In 1962, two other companies began to manufacture aluminum sulphate: Inland Chemical Company Limited, at Fort Saskatchewan, Alberta and Border Chemical Company Limited, at Winnipeg, Manitoba. In addition, in 1964, Alcan announced that it would build a second plant in the Shawinigan - Three Rivers area of Quebec, to produce liquid aluminum sulphate. Thus, in 1965, there were four companies, operating ten plants which produced aluminum sulphate for sale and an eleventh plant was producing for its own use.

The Market

The market in Canada, in 1962, is estimated to have been about 100,000 tons, valued at nearly \$4 million. The market growth has been substantial in recent years. At the public hearing, it was estimated that in 1958 the market was for about 75,000 to 80,000 tons, indicating an increase of about 20 to 25 per cent during the intervening four years. The establishment of two new producers in 1962 and expansions involving new and existing facilities which have been undertaken since 1962 suggest that the growth of Canadian production and use has been at an accelerated rate.

Nichols estimated that about 10 to 11 per cent of Canadian consumption, in 1961, was of the liquid. At that time Nichols was the only producer of this form, in Canada. The available information indicates that the liquid is becoming a larger proportion of sales and use.

Aluminum sulphate has two major uses in Canada, the principal one being in the production of wet-strength, fine papers and the lesser one, in the purification of municipal water supplies. About 83 per cent of the total use in 1958 was by pulp and paper mills and 16 per cent was for water treatment. The manufacture of chemicals accounted for most of the remaining known uses. In 1963 the pattern of consumption appeared to be essentially unchanged.

Consumption of Aluminum Sulphate, by Principal Use, 1958, 1962 and 1963

	<u>1958</u>	<u>1962</u>	<u>1963</u>
		- tons -	
Pulp and Paper	63,911	70,243	73,541
Municipal Waterworks	12,035	12,939(a)	12,939(a)
Chemical Products	567	610	813
Leather Tanning	<u>72</u>	<u>..</u>	<u>..</u>
Total Accounted For	76,585	83,792	87,293

(a) 1959 data

Source: D.B.S., Various publications

When the product is to be used for the manufacture of pulp and paper or for water purification, the commercial grade is purchased; for other applications the iron-free grade is used. Although the principal use of aluminum sulphate by the pulp and paper mills is for wet-strength paper, they also use it to control the acidity or alkalinity in their processes, as a mordant in dyeing paper and in other applications.

The concentration of the pulp and paper industry east of Manitoba and in British Columbia indicates that the principal market areas are in these regions. In general, Canadian pulp and paper mills are located a considerable distance from aluminum sulphate plants in the U.S.A.

Pricing Policy

Aluminum sulphate is sold f.o.b. plant, freight equalized, in both Canada and the U.S.A. Nichols Chemical stated that the company equalized on other Canadian producers. At the time of the hearing the only other Canadian producer was Alcan, whose plant was at Arvida, Quebec. Published Canadian prices for the anhydrous form were unchanged in Central and Eastern Canada, from 1959 until 1964, but they were increased in the West in 1962. In 1964 Eastern prices were also increased. Prices in Western Canada were considerably higher in the years 1959-64, for example \$52 a ton for the commercial grade compared with \$40 a ton in the East.

Prices are not published for liquid aluminum sulphate but, at the time of the hearing, the price of the liquid was said to be \$36 a ton, f.o.b. Valleyfield, only \$4 a ton less than the dry form in bulk. In terms of chemical content the liquid would be about $1\frac{1}{4}$ times as costly as the dry form, indicating that the advantages of using the liquid, where it is used, are substantial.

Prices of Aluminum Sulphate, Canada and the U.S.A.,
Commercial Grade, Ground, Bulk, in Carloads, Freight Equalized,
1959-65

	Canada		U.S.A.
	East	West	
	Can. per ton		U.S. per ton
1959	40.00	50.00	40.00
1960	40.00	50.00	40.00
1961	40.00	50.00	40.00
1962	40.00	52.00	40.00
1963	40.00	52.00	40.00
1964	40.00 - 42.00	52.00	44.00
1965	42.00	52.00	44.00

Source: Canadian Chemical Processing and Oil, Paint and Drug Reporter

Prices of the purer grades of aluminum sulphate are considerably higher than for the commercial grade. In 1964, in the U.S.A.,

the iron-free grade, in bags, was priced at \$76 a ton and the U.S.P. grade, in 400 pound drums, was 30 cents a pound, a rate of \$600 a ton.

Transportation

Freight cost may be a substantial part of the total delivered cost of aluminum sulphate and, for an equal distance, would be much greater for the liquid than for the dry form, in terms of chemical content. However, the advantages of using the liquid have led to its increased use, while the disadvantage of expensive transportation has led to the establishment of plants close to paper mills, the principal consumers. In this connection an authoritative U.S. source comments that:

"The most recent trend in the industry is the construction of plants close to paper mills (the chief users of aluminum sulfate) so that the product may be shipped as a solution, thus reducing handling in both plants. This trend will probably continue."⁽¹⁾

The costs of freight for the dry form, to some of the major consuming points in Eastern Canada, are tabulated below. The data indicate that the cost of freight even to relatively nearby points constitutes between 10 and 15 per cent of the price, f.o.b. plant, while to the more distant locations, particularly in the Atlantic Provinces, freight costs range from 40 per cent to 56 per cent of the f.o.b. plant price. Because approximately two tons of liquid would have to be shipped to equal the chemical content of one ton of dry material, the costs of transporting the liquid would be much higher. It should be noted that Allied Chemical Company now operates a plant at Dalhousie, New Brunswick.

Rail Freight Rates in Effect in 1964, for Dry Aluminum Sulphate
Shipped in Bulk, from Valleyfield and Arvida, Quebec,
to Selected Consuming Points in Eastern Canada

<u>To:</u>	<u>From</u>	
	<u>Valleyfield</u>	<u>Arvida</u>
	\$ per ton(a)	
Kapuskasing, Ont.	14.00	-
Chandler, Que.	11.75	11.75
Quebec, Que.	6.00	5.20
Windsor Mills, Que.	4.00	8.40
Bathurst, N.B.	8.90	8.90
Dalhousie, N.B.	13.00	13.00
Kentville, N.S.	22.60	22.60
Hantsport, N.S.	18.60	18.60
Pt. Hawkesbury, N.S.	15.80	15.80

(a) Only the lowest rates are given; higher rates would apply in some cases to smaller shipments

Source: Agreed Charges issued by the Canadian Freight Association

(1) Faith, Keyes and Clark, Industrial Chemicals, 1957, p. 78

Foreign Trade

Most of the aluminum sulphate used in Canada is supplied by domestic production. At the public hearing it was estimated that, in 1958, only about eight per cent of the total was imported and that this proportion was steadily decreasing. In 1964, imports probably constituted about two per cent of Canadian use.

Imports of Sulphate of Alumina or Alum Cake, by
Principal Country of Origin, 1958-64

	<u>U.K.</u>	<u>U.S.A.</u>	<u>Western</u> <u>Germany</u>	<u>Total</u>	
		- tons -		tons	\$ '000
1958	2,290	3,650	191	6,147	228
1959	3,748	3,430	145	7,370	268
1960	4,686	4,024	140	8,899	323
1961	1,085	2,690	109	3,883	153
1962	552	1,816	110	2,506	107
1963	255	2,020	214	2,489	115
1964	1,219	1,484	80	2,783	119

Source: D.B.S., Trade of Canada, Imports, s.c. 8254

Most imports are entered in provinces east of Manitoba; imports into Western Canada are irregular and very small in amount. About two thirds of the imports are entered in Ontario. In general, imports from overseas are into the Atlantic Provinces and Quebec; imports into Ontario are mostly from the U.S.A. Because of the high cost of transporting the less concentrated, liquid form, all imports from overseas are of the dry form as are most imports from the U.S.A.

At the hearing, Nichols Chemical Company stated that the plants in the U.S.A. most competitive in the Canadian market were located in California, at East St. Louis, Illinois and at Detroit, Michigan. These plants would compete in British Columbia, the Prairies and part of western Ontario, respectively. Nichols' parent, Allied Chemical and Dye Corporation, has plants at each of these locations in the U.S.A. Nichols informed the Board that it supplies some of the Canadian market with aluminum sulphate imported from the U.S.A.

The freight advantages of some United States plants permit them to export to Canada and similar advantages of Canadian plants have resulted in exports to the U.S.A. Exports to the U.S.A. began in 1957, with the exportation of 320 tons, valued at \$9,795; in 1963, exports to the U.S.A. were 3,583 tons, valued at \$190,608. Until 1961 imports exceeded exports; in 1961, 1962 and 1963 the value of exports was larger than that of imports. Most of the aluminum sulphate exported by Canadian producers was of the iron-free grade, with an average value, in 1963, of \$Can. 57.38 per ton or \$U.S. 53.20. Imports into the U.S.A. from Canada are dutiable at 10 cents per 100 pounds. The ad valorem equivalent at the published price in the U.S.A., for the iron-free grade in 1964, is 2.6 per cent. For the commercial grade the ad valorem equivalent would be approximately 5 p.c.

Imports of Sulphate of Alumina or Alum Cake, by Province
of Entry and Country of Origin, 1962 and 1963

<u>1962</u>	<u>U.K.</u>	<u>France</u>	<u>Western Germany</u>	<u>U.S.A.</u>
			- tons -	
Nfld.	500	-	-	-
N.S.	30	-	-	-
Quebec	9	28	60	125
Ont.	14	-	50	1,621
Man.	-	-	-	70
Canada	552	28	110	1,816
<u>1963</u>				
N.B.	84	-	-	-
Que.	140	-	113	544
Ont.	26	-	101	1,476
B.C.	6	-	-	-
Canada	255	-	214	2,020

Source: Dominion Bureau of Statistics, s.c. 8254

Exports of Aluminum Sulphate to the U.S.A., 1957-63

	<u>tons</u>	<u>\$U.S.</u>	<u>\$U.S. per ton</u>
1957	320	9,795	30.61
1958	1,122	47,768	42.57
1959	2,677	121,456	45.37
1960	3,112	160,494	51.57
1961	3,132	173,687	55.46
1962	4,018	166,854	41.53
1963	3,583	190,608	53.20

Source: U.S. Imports for Consumption, s.c. 8380150

Tariff Considerations

Aluminum sulphate is entered under tariff item 212, at Free, B.P. and 10 p.c., M.F.N. The calcined form is entered under item 208t, Free, B.P. and 15 p.c., M.F.N.

	<u>British Preferential Tariff</u>	<u>Most- Favoured- Nation Tariff</u>
<u>Item 212</u>		
Sulphate of alumina or alum cake; and alum in bulk, ground or un- ground, but not calcined.....	Free	10 p.c.

In the five years, 1960-64, two thirds of the value of imports were from M.F.N. countries, most M.F.N. imports originating in the U.S.A.

At the public hearing, in February 1961, Nichols Chemical Company Limited proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., for aluminum sulphate, in an item worded like heading 28.38 of the Brussels Tariff Nomenclature.(1)

Peter Spence and Sons Limited, of England,(2) and Bathurst Power and Paper Company,(3) urged that the existing rates of duty under item 212 be retained.

The Canadian Pulp and Paper Association recommended that there be no increase in rates.(4)

Polymer Corporation Limited expressed an interest in aluminum sulphate. It urged continued free entry, under both the B.P. and M.F.N. Tariffs, for chemicals used in the production of synthetic rubber.(5)

The Canadian Pharmaceutical Manufacturers Association listed the chemical as one which was of relatively small economic importance to its members and recommended rates of 15 p.c., B.P. and 20 p.c., M.F.N., for chemicals made in Canada and used in the manufacture of pharmaceuticals.(6)

Thus Nichols and, in effect, the Pharmaceutical Manufacturers Association proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N.; Peter Spence, Bathurst Power and Paper and the Pulp and Paper Association recommended that no change be made in the existing rates of Free, B.P. and 10 p.c., M.F.N., under item 212; and Polymer requested the retention of duty-free entry under end-use item 851.

(1) Transcript, Vol. 25, p. 3638

(2) Same, Vol. 25, p. 3696

(3) Same, Vol. 25, p. 3697

(4) Same, Vol. 25, p. 3686; Vol. 36, p. 5246

(5) Same, Vol. 24, p. 3498; Vol. 89, p. 13587

(6) Same, Vol. 87, p. 13321

In support of its proposed rates, Nichols claimed that the smaller Canadian market limited the scale of its operations, that it incurred higher investment costs than producers in the U.S.A., and that its manufacturing and marketing costs were higher than competing foreign plants. Its spokesman also said the company's problems were aggravated by having to serve a dispersed market. A major argument was that the increased rates would insulate the company from sharp price declines that might occur in the U.S.A. or in the United Kingdom.

At the time of the hearing, five Canadian plants were producing about 80,000 to 90,000 tons of aluminum sulphate, their average output thus being 16,000 to 18,000 tons. In fact, two plants, that of Nichols at Valleyfield and that of Alcan, at Arvida, had very much larger outputs than these averages and the three other Nichols plants each produced much less than the average. At that time, 63 plants in the U.S.A. produced 958,000 tons, an average of 15,000 tons per plant. Although the average size of plant was larger in Canada than in the U.S.A., the largest plants in that country had several times the capacity of the Valleyfield or Arvida establishments. Nevertheless, these data indicate that many plants in the U.S.A. were much smaller than the two largest Canadian plants and others were much the same size as the Canadian plants. These data, together with the advantages of location previously cited, indicate that there are no over-riding advantages to be had from large scale.

The spokesman for Peter Spence and Sons, which manufactures aluminum sulphate in Britain, said that scale was a matter of little consequence in the production of this chemical. He referred to relatively small plants in the U.K. and in Finland which he said operated profitably. In Finland they did so without tariff protection. He also said:

"I don't know what is the size of an optimum plant in the United States;...What I do know is that in the United States of America many companies have decentralized their production to place liquid plants -- in some cases solid plants -- strategically close to the point of consumption."(1)

He commented on Nichols' fear of drastic price declines as follows:

"It was said that in 1940 there was price warfare in the United States; that is true, but...the real trouble was warfare in the real sense of the term.

"What happened was the United States companies found themselves without their traditional export markets;...so that they tried to place their marginal production wherever they could, and in this instance in Canada, and it was at that time that aluminum sulphate was not protected by anti-dumping duty, and they could do just that. They couldn't do it today."(2)

(1) Transcript, Vol. 25, p. 3701

(2) Same, Vol. 25, p. 3703

The available information tends to support the contention of the Peter Spence spokesman that "geography gives overwhelming protection to the domestic producers of aluminum sulphate in Canada." (1) Imports, which previously had been about 15,000 tons annually, declined to only 6,000 tons in 1958, about the time that the Nichols' plants at Thorold, Port Arthur and Vancouver came into operation. Although the Canadian market has grown very substantially since that time, imports have declined to about 2,500 tons annually and are currently exceeded by Canadian exports to the U.S.A.

Peter Spence and Sons' spokesman said that imports from the U.K. were competitive only on the Atlantic seaboard and, generally, only if consumers were able to take delivery in bulk from a steamer. He contended that the application of a tariff on imports from the U.K. would almost certainly price British aluminum sulphate out of the Canadian market and increase the cost of the product to Canadian purchasers. He stated that freight and other costs involved in shipping to Canada constituted about one third of the c.i.f. price in Canada.

Bathurst Power and Paper and the Pulp and Paper Association opposed any increase in rates on the grounds that the costs of basic raw materials would be increased. The Pulp and Paper Association claimed that its members faced strong competition both in the domestic and export markets and higher costs would make it more difficult for them to compete.

The Pharmaceutical Manufacturers Association did not indicate why rates of 15 p.c., B.P. and 20 p.c., M.F.N., would be appropriate specifically for aluminum sulphate.

COBALT SULPHATE

Cobalt sulphate is available commercially in two forms, a hexahydrate and a monohydrate. The former contains about 21 per cent cobalt metal, the latter 33 per cent. Cobalt sulphate is usually produced by the action of sulphuric acid on cobalt metal or cobalt oxide. Mallinckrodt Chemical Works Limited produced the chemical in Canada until 1962, using a process in which the oxide was the raw material.

Cobalt sulphate is used mainly as an additive in animal feeds and as a raw material in the production of paint driers. Its lesser applications are in ceramic glazes, storage batteries and as a raw material for the production of other cobalt salts.

At the public hearing in February 1961, the spokesman for Mallinckrodt estimated that about one half of Canadian market requirements was supplied by imports. This suggests annual sales, at that time, of about \$10,000. The discussion at the hearing and information available in the Canadian Minerals Yearbook suggest that most imports are from Britain and consist almost entirely of cobalt sulphate produced from raw materials supplied by the International Nickel Company (Inco) to its subsidiary refinery in Wales.

(1) Transcript, Vol. 25, p. 3704

The distributor for such Inco products in Canada is the St. Lawrence Chemical Company Limited, which supplies the Canadian market with cobalt salts in the form of the acetate, carbonate, sulphate and hydrate. The first three salts are also produced for sale by Mallinckrodt. St. Lawrence Chemical reports its distribution of sales by use and, although these are not reported in terms of individual cobalt salts, the data indicate the relative importance of various uses as a market for the salts.

Distribution of Sales of Cobalt Acetate, Cobalt Carbonate,
Cobalt Hydroxide and Cobalt Sulphate, for Various
Uses, by St. Lawrence Chemical Company Limited,
1960-62

	<u>1960</u>	<u>1961</u>	<u>1962</u>
	per cent of total sales		
Driers	26	51	46
Ceramics	10	2	26
Animal Feeds	61	30	23
Chemicals	3	17	4
Miscellaneous	<u>-</u>	<u>-</u>	<u>1</u>
	100	100	100

Source: Canadian Minerals Yearbook, 1962

Cobalt sulphate is a relatively high-priced chemical. In 1964, the price of the hexahydrate in the U.S.A. was 64 cents a pound, delivered to consumers, and that of the monohydrate was \$1.09 a pound, delivered. Prices have declined during the past decade.

Prices of Cobalt Sulphate, in the U.S.A.,
Delivered to Buyers, Selected Years, 1953-65

	<u>Crystals 21% Cobalt,</u> <u>in Drums</u>	<u>Monohydrate, 33%</u> <u>Cobalt, in Drums</u>
	- dollars per pound -	
1953	.81 $\frac{3}{4}$ - .89	1.285 - 1.40
1955	.89	1.40
1957	.69 - .79	1.17 - 1.32
1959	.64 - .69	1.09 - 1.17
1961	.64	1.09
1963	.64	1.09
1964	.64	1.09
1965 (Jan.-July)	.64 - .65 $\frac{1}{2}$	1.09 - 1.15

Source: Oil, Paint and Drug Reporter

At the public hearing, the spokesman for Mallinckrodt said that in recent years the monohydrate had become the form preferred by consumers and that for most applications the hexahydrate is

substitutable. The choice between the two is determined largely by relative prices and individual preference, although the higher water content and lower concentration of cobalt in the hexahydrate may also be factors affecting its use.

At the time of the hearing, Deloro Smelting and Refining Company Limited, the only Canadian merchant-producer of cobalt oxide, had ceased production of this product, which is the raw material used in the Mallinckrodt process. The Mallinckrodt spokesman informed the Board that his company had been unsuccessful up to the time of the hearing in locating an alternative source of supply, either in Canada or abroad. However, late in 1961, Cobalt Refinery Company Limited began production of cobalt oxide of a grade suitable for use in the manufacture of cobalt sulphate and in sufficient volume to supply at least a large part of the Canadian demand for the material.

Tariff Considerations

Cobalt sulphate is entered under tariff item 208t at Free, B.P. and at 15 p.c., M.F.N. At the time of the hearing, in 1961, grades other than pharmaceutical were entered as unenumerated products under tariff item 711, at rates of 15 p.c., B.P. and 20 p.c., M.F.N. However, effective March 26, 1962 the Department of National Revenue ruled that the product was not made in Canada, and all imports of Cobalt sulphate became dutiable at Free, B.P. and 15 p.c., M.F.N. under item 208t. When for use in the manufacture of animal feeds it can be entered free of duty under item 219h which is not part of Reference 120.

At the public hearing in February 1961, Mallinckrodt Chemical Works Limited proposed continuation of the then existing rates of 15 p.c., B.P., 20 p.c., M.F.N. Although the company imported some of the very pure products for its own use or resale, its spokesman did not specify different tariff treatment for the reagent grade.⁽¹⁾

At an earlier hearing, in January 1961, Nuodex Products of Canada Limited, one of the two companies which produce cobalt driers in Canada, urged that the rates for all cobalt-bearing materials should be the same, in order not to discriminate between manufacturers who used particular ones in the production of paint driers. Nuodex has patented a process in which cobalt metal is the basic raw material. The company also uses the sulphate in the manufacture of driers. Cobalt metal is entered under an extract from item 208t, at Free B.P. and 10 p.c., M.F.N. The other Canadian producer of driers uses cobalt hydroxide as its raw material and imports it under item 208t, at Free, B.P. and 15 p.c., M.F.N.

The Nuodex proposal was repeated at the hearing on cobalt sulphate.⁽²⁾ The company was concerned that cobalt sulphate, one of its important raw materials, was then dutiable at 15 p.c., B.P. and 20 p.c., M.F.N., while the raw material used by its principal competitor, cobalt hydroxide, was entered at rates of Free, B.P. and 15 p.c., M.F.N. Nuodex stated that the supply of Canadian-produced

⁽¹⁾ Transcript, Vol. 25, p. 3772

⁽²⁾ Same, Vol. 18, p. 2579; Vol. 25, p. 3786

cobalt sulphate had been insufficient for its needs since Deloro had discontinued production. The spokesman for Mallinckrodt admitted that the then current unavailability of cobalt oxide prevented it from producing enough to supply Canadian needs. As noted earlier, cobalt sulphate was ruled as not made in Canada early in 1962 and is now dutiable at Free, B.P. and 15 p.c., M.F.N., under item 208t.

The Canadian Federation of Agriculture listed cobalt sulphate as an additive for animal feeds and fertilizers and proposed that chemicals used for nutritional purposes by farmers or veterinarians in animal feeds, or in the manufacture of fertilizers should be free of duty under all Tariffs.⁽¹⁾

The proposal of Mallinckrodt would leave the former rates unchanged, for the grade of cobalt sulphate that was entered under item 711. However, it would increase the rates for the very pure product, which has never been made in Canada, from Free, B.P. and 15 p.c., M.F.N., to 15 p.c., B.P. and 20 p.c., M.F.N.

The Nuodex proposal for uniformity of rates for all cobalt-bearing materials is difficult to assess. If the proposal is taken literally, the rates being proposed might be either those under item 208t for cobalt hydroxide, those under the extract of item 208t, for cobalt metal, or those under item 711, for cobalt sulphate.

Mallinckrodt's request for rates of 15 p.c., B.P. and 20 p.c., M.F.N., was supported mainly by the claim that the company's costs of cobalt raw materials were higher than those of competitors in Britain. This competition appears to be from a subsidiary of the International Nickel Company, which processes raw materials supplied from Inco's operations at Sudbury, Ontario.

At the time of the hearing, cobalt oxide, the raw material used by Mallinckrodt, was not available from Canadian production. It is now produced in Canada in sufficient volume to supply at least a large part of the Canadian demand, and some is being exported to the U.S.A.

COPPER SULPHATES

There are several sulphates of copper, including cupric sulphate (commonly known as copper sulphate and, when not dehydrated, as blue vitriol), cuprous sulphate and tribasic copper sulphate.

Although cupric sulphate (blue vitriol) is a product of substantial economic importance both from the standpoint of Canadian production and imports, the only representations made to the Board relating to it were by consumers. No representations were made relating specifically to cupric sulphate either by producers or distributors of the product.

Cupric sulphate is produced in Canada by at least one company, Canadian Copper Refiners Limited, at Montreal, Quebec;⁽²⁾ it is

⁽¹⁾ Transcript, Vol. 78, p. 11925; Vol. 83, p. 12813

⁽²⁾ Canadian Minerals Yearbook, 1962

recovered by vacuum evaporation of refinery wastes. Production data are not public but it is known that the output of the company is several times greater than imports, which amounted to 218 tons valued at \$69,000, in 1964.

Consumption data are relatively complete only for the year 1960, when about 2,500 tons of cupric sulphate valued at \$653,000 were accounted for by the statistics. The actual consumption is much larger than indicated by these figures. In 1960 metal mines were reported as using 2,200 tons valued at \$553,000 and the chemical industry 150 tons valued at \$73,000. No data are available regarding its use as a germicide and fungicide, as a mordant by the textile and leather industries, in pigments, the preservation of wood, the treatment of water supplies or in other applications in which the chemical is known to be used.

Imports are almost entirely from the U.S.A. and Britain, but occasional small shipments are imported from continental Europe. Imports have declined sharply since the beginning of the present decade and in 1964 were about one-sixth those in 1959. Most of the decline has been in imports from Britain.

Imports of Copper Sulphate, by Country of Origin,
Selected Years, 1953-64

	<u>U.K.</u>	<u>U.S.A.</u> - tons -	<u>Other</u>	<u>Total</u> tons \$'000	
1953	1,029	967	-	1,996	468
1955	540	593	-	1,133	310
1957	607	407	3	1,018	263
1959	873	336	99	1,309	289
1961	81	296	10	387	113
1962	97	335	6	437	159
1963	123	243	-	366	112
1964	4	214	-	218	69

Source: D.B.S., Trade of Canada, Imports, s.c. 8275

Prices for the various copper sulphates published in the U.S.A. are given below:

Prices of Copper Sulphate, in the U.S.A., 1960-65

	(Blue Vitriol) Chemically Pure Crystals, 99%, <u>in bags, at works</u>	Monohydrated 35%, in drums, <u>at works</u>	Tribasic, Dealers, bags, at works, <u>frt. equalized</u>
	\$ per 100 pounds, in carloads		
1960	12.25-13.00	23.00-24.00	29.60
1961	12.00-12.50	22.65-23.35	28.60-29.60
1962	12.50	23.35	28.60
1963	12.50	23.35	28.60
1964	12.50-14.50	23.35-23.75	28.60-32.25
1965 (Jan.-Oct.)	15.00-15.50	24.45-25.10	31.15-33.40

Source: Oil, Paint and Drug Reporter

Tariff Considerations

Most copper sulphates are entered under item 208t, Free, B.P. and 15 p.c., M.F.N. Dehydrated cupric sulphate, technical or commercial grade, is under item 711 at 15 p.c., B.P. and 20 p.c., M.F.N.; anhydrous cupric sulphate (blue vitriol) is under item 208m, at Free, B.P., 10 p.c., M.F.N. Some of the copper sulphates are also entered free of duty under both Tariffs for end-use purposes related to agriculture set out in tariff items 208c, 219a, 663b and 791. Tariff item 208c provides for dehydrated sulphate of copper for agricultural or spraying purposes; item 219a provides for pesticides and item 791 for materials used in their manufacture; item 219h provides for chemicals, of a kind not produced in Canada, for use in the manufacture of animal or poultry feeds; and tariff item 663b for materials used in the manufacture of fertilizers.

Anhydrous cupric sulphate, blue vitriol, appears to be the form chiefly imported. In 1964, the only year for which such data are available, about 80 per cent of the imports of copper sulphates were entered under item 208m which relates to blue vitriol.

As indicated earlier, the only representations made to the Board relating specifically to copper sulphates were by various consumer interests.

The Canadian Pulp and Paper Association⁽¹⁾ and Consolidated Mining and Smelting Company of Canada Limited (Cominco)⁽²⁾ urged that the existing rates not be increased. Cominco also urged that no change be made in end-use items, which would increase the costs of a Canadian manufacturer.

The Canadian Federation of Agriculture listed copper sulphates as materials used in fertilizers, animal and poultry feeds and pesticides and urged that all materials so used be free of duty under both the B.P. and M.F.N. Tariffs, in appropriate end-use items.⁽³⁾

Seven manufacturers of pesticides requested that tribasic copper sulphate be entered free of duty under both the B.P. and M.F.N. Tariffs, when the product is for use in the manufacture of pesticides.⁽⁴⁾

The Canadian Pharmaceutical Manufacturers Association listed copper sulphate as one of a group of chemicals of minor economic importance to its members. The Association recommended that chemicals used in the manufacture of pharmaceutical products should be dutiable at rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, while they are not made in Canada and at rates of 15 p.c., B.P. and 20 p.c., M.F.N., when they are made in Canada.⁽⁵⁾ The Association did not indicate why these rates would be appropriate specifically for copper sulphate.

(1) Transcript, Vol. 26, p. 3792

(2) Same, Vol. 5, p. 715

(3) Same, Vol. 83, p. 12813; Vol. 108, p. 16332

(4) Same, Vol. 108, p. 16326

(5) Same, Vol. 87, p. 13321

In general, the consumer interests supported their proposals by saying that increases in duty would raise their costs and make them less able to meet competition in both domestic and export markets.

BASIC LEAD SULPHATE AND TRIBASIC LEAD SULPHATE

Two forms of lead sulphate are known to be of commercial importance in Canada, basic lead sulphate and tribasic lead sulphate. The former is used almost entirely in exterior paints, the latter almost entirely as a stabilizer in plastics. Basic lead sulphate contains 74 per cent of lead and the tribasic form contains 84 per cent. Lead constitutes the principal cost of raw materials.

Both forms are produced in Canada only by McArthur, Irwin Limited, at Montreal, Quebec. The company produces a number of lead products including lead oxides (litharge and red lead) and basic lead carbonate (white lead). It manufactures lead sulphate by reacting a suspension of litharge in water with sulphuric acid. It began producing lead sulphate in the 1940's as a means of utilizing excess plant capacity and to provide a lower cost white pigment than lead carbonate.

Basic lead sulphate may be used, as such, in paints or it may be mixed with other chemicals. The spokesman for McArthur, Irwin said that the paint industry is using "composite pigments" to an increasing extent. Such pigments may contain titanium dioxide to provide whiteness and opacity, zinc oxide to provide hardness of surface, and lead sulphate for the durability which it imparts. Such composite pigments would be dutiable at $12\frac{1}{2}$ p.c., B.P. and $17\frac{1}{2}$ p.c., M.F.N., under item 246. An important and long-standing use of basic lead sulphate is in the production of leaded zinc oxide pigment. Leaded zinc oxide may contain from 5 to 75 per cent lead sulphate. However, two common commercial forms contain 35 per cent and 50 per cent of basic lead sulphate and probably represent a substantial part of the consumption.

It is difficult to assess the size of the Canadian market for basic lead sulphate, partly because of the changes in statistical classification introduced in 1960 and partly because the content of lead sulphate in the leaded zinc oxide used by the Canadian paint industry is not known. In the tabulation that follows it is assumed that the leaded zinc oxide contains 35 per cent of lead sulphate, but the actual content could be higher or much lower.

The data suggest that more basic lead sulphate is consumed in the form of leaded zinc oxide than in the form of the chemical itself. They also suggest declining sales to the paint industry which, in 1962, accounted for about 150,000 pounds with a value of approximately \$27,000. The data suggest that the use of lead sulphate in the chemical industry is also declining.

There are no published data available regarding Canadian use of tribasic lead sulphate. However, information available to the Board indicates that Canadian consumption of this form is considerably larger, both in quantity and value, than that of basic lead sulphate.

Consumption of Lead Sulphate, by Industry,
1957-62

<u>Basic Lead Sulphate Used in Paints</u>				<u>Lead Sulphate</u>	<u>Estimated</u>
<u>as basic</u>	<u>in leaded</u>	<u>(a) Total</u>	<u>Used in</u>	<u>Total Value</u>	
<u>lead sulphate</u>	<u>zinc oxide</u>		<u>Industrial</u>	<u>of Use in</u>	
			<u>Chemicals</u>	<u>Paints and</u>	
<u>- thousand pounds -</u>					<u>Ind. Chemicals</u>
					<u>\$'000</u>
1957	164	193	357	125	88
1958	151	177	328	93	74
1959	157	188	345	76	90
1960	108	128	236	50	50
1961	84	119	203	4	39
1962	61	89	150	35	33

(a) Assumes basic lead sulphate to be 35 per cent of gross weight reported

Source: D.B.S., Annual Publications, Cat. Nos. 46-210 and 46-219

The spokesman for McArthur, Irwin said that the competition from titanium dioxide was a major factor in the declining use of basic lead sulphate and was largely responsible for the company's declining sales of the latter. He said this trend had become apparent in 1949, soon after the company had begun production of lead sulphate.

The market for basic lead sulphate, as for all pigments, is concentrated in the industrial areas of Quebec and Ontario, particularly around Montreal and Toronto. Although McArthur, Irwin has at times sold its products from coast to coast, almost all sales were said to be in the two Central Provinces.

McArthur, Irwin sells basic lead sulphate, f.o.b. the Montreal plant and tribasic, delivered in Ontario and Quebec. In the U.S.A., both products are sold on a delivered basis. The company indicated it could deliver its products anywhere in Canada at a lower laid-down cost than the United States products. However, only in Quebec and Ontario would this be true if there were no duty. The spokesman estimated that the company supplied about 75 per cent of Canadian use and the principal competition arose in British Columbia and on the Atlantic seaboard from imports from Britain.

Canadian prices for lead sulphates are not published. The table which follows shows prices in the U.S.A. for basic lead sulphate and other competitive products some of which are also designated as "white lead". At the time of the hearing, February 1961, the Canadian price for basic lead sulphate was said to be \$15.60 per 100 pounds, f.o.b. Montreal; the comparable price in the U.S.A. was \$17 a hundredweight, delivered.

Prices of White Lead and Leaded Zinc Oxide
in the U.S.A., Carloads, Delivered, in Bags,
1959-65

	<u>Basic Sulphate</u>	<u>Basic Carbonate</u>	<u>Basic Silicate</u>	<u>Leaded Zinc Oxide, 50%</u>
	- dollars per hundredweight -			
1959	16.25-17.00	17.00-18.00	15.75-16.50	15.38-15.75
1960	17.00	18.00	16.50	15.75
1961	15.50-17.00	16.50-18.00	15.50-16.50	14.50-16.50
1962	15.50	16.50	15.50	14.25
1963	15.50-16.75	16.50-17.75	15.50-16.25	14.25-14.88
1964	16.75-17.75	17.75-19.00	16.25	14.88-15.13
1965	19.00	20.50	17.25	16.00

(Jan.-Aug.)

Source: Oil, Paint and Drug Reporter

The import statistics are not sufficiently detailed to permit separation of basic lead sulphate from other products. The term "white lead" is sometimes applied to basic lead sulphate, basic lead carbonate, basic lead silicate and perhaps others; at times, the term is applied more specifically to basic lead carbonate. However, the trade statistics may combine all of these forms under the designation "white lead". The spokesman for McArthur, Irwin said that the import data included more lead carbonate than basic lead sulphate.

Imports of White Lead, by Country of Origin,
Selected Years, 1953-63

	<u>U.K.</u>		<u>U.S.A.</u>		<u>Total</u>	
	'000 lb.	\$'000	'000 lb.	\$'000	'000 lb.	\$'000
1953	68	10.5	4	0.7	72	11.2
1955	16	2.9	59	7.4	75	10.3
1957	-	-	9	2.2	9	2.2
1959	26	3.1	2	0.4	28	3.5
1960	7	1.0	402	47.2	408	48.2
1961	7	1.1	760	99.1	767	100.2
1962	14	1.8	160	26.3	174	28.1
1963	9	1.3	17	3.7	26	5.0

Source: D.B.S., Trade of Canada, Imports, s.c. 8173, 8174

If, as stated at the hearing, most imports of basic lead sulphate are from the U.K., they would appear to constitute only a very small part of estimated Canadian use. However, it should be kept in mind that imports as leaded zinc oxide are not shown and might represent larger amounts of the lead sulphate.

There are no satisfactory published trade figures for tri-basic lead sulphate. However, the available information indicates that imports of the group of chemicals designated as "lead sulphate compounds" have been significant. These appear to be for use in plastics.

Imports of Lead Sulphate Compounds, 1956-60

\$ '000

1956	125
1957	80
1958	70
1959	80
1960	70

Source: Department of Trade and Commerce, Chemical Import Trends

Tariff Considerations

Basic lead sulphate is entered under tariff item 243, "dry white lead", at rates of 15 p.c., B.P. and 20 p.c., M.F.N. At the time of the hearing basic and tribasic lead sulphate could also be entered under end-use item 921, as materials of a kind not produced in Canada, for use in the manufacture of plastics, free of duty under both the B.P. and M.F.N. Tariffs. Artificial lead sulphate is entered under tariff item 208t at rates of Free, B.P. and 15 p.c., M.F.N. Lead sulphate tribasic has been ruled made in Canada and is dutiable at rates of 15 p.c., B.P. and 20 p.c., M.F.N., under item 711. McArthur, Irwin Limited proposed that rates of 15 p.c., B.P. and 20 p.c., M.F.N. should apply to the basic and tribasic lead sulphates of B.T.N. heading 28.38, and that item 921, which was applicable to tribasic lead sulphate at the time of the hearing, should not apply to these products.(1) This item is no longer applicable because tribasic lead sulphate has since been ruled made in Canada.

The Canadian Paint, Varnish and Lacquer Association supported these proposals "wholeheartedly", but only in so far as they applied to basic lead sulphate.(2)

Associated Lead Manufacturers of London, England (A.L.M.) and the Pigment and Chemical Company Limited, its Canadian distributor, proposed that basic and tribasic lead sulphate, of B.T.N. heading 28.38, be free of duty under the B.P. Tariff. They made no proposal regarding the rates under the M.F.N. Tariff. They also proposed that the B.P. rate under item 921 (Free) be made permanent.(3)

The Industry Committee opposed permanent free entry for the material entered under end-use provisions, as in the case of the tri-

(1) Transcript, Vol. 26, p. 3800

(2) Same, Vol. 26, p. 3827

(3) Same, Vol. 26, p. 3833-4

basic form for use in plastics.⁽¹⁾ This provision in existing item 921 applies only to materials deemed to be of a kind not produced in Canada.

In support of its proposals, McArthur, Irwin referred to its presentation to the Board at the time of the hearing on lead oxides. The company spokesman said European producers could buy the principal raw material, lead, more cheaply and therefore had a cost advantage in producing lead compounds. He also said the proposed rates would assist the company in retaining a larger share of the declining market than it otherwise would have.

The paint manufacturers' support was based on their stand that Canadian manufacturers should be protected from foreign competition.

A.L.M.'s brief said the industry had been long established in Canada and was protected by anti-dumping provisions and the M.F.N. Tariff against competition from low-wage countries. The brief also referred to the fact that there was only one Canadian producer and said that the availability of U.K. supplies as an alternative to the domestic product is of benefit to Canadian manufacturers.

The proposals of McArthur, Irwin would leave unchanged the existing rates for the lead sulphate that is entered under items 243 and 711. However, the rates for artificial lead sulphate which is now entered under item 208t would be increased substantially.

A.L.M. indicated that it could not "state categorically whether this material lead sulphate tribasic is manufactured in Canada or not". In its brief, McArthur, Irwin made the following reference to tribasic lead sulphate: "...end-use treatment can be obtained for specialty grades under Tariff Item 921..."⁽²⁾ These statements, in conjunction with the "not-made-in Canada" ruling that formerly applied, suggest that at least part of the imports under this item were of grades that were not then available from Canadian production.

However, the principal problem of McArthur, Irwin, the decline in markets for its products, would not be solved by an increase in the rates of duty. The spokesman for the company acknowledged this in the following exchange:

Q: "So that basically the declining sales are more due to competition from what you call more efficient pigmenting chemicals?"

A: "That is correct.

Q: "So, in effect, duty will do little to rectify what Providence and the scientists have done to you?"

A: "That is quite correct."⁽³⁾

(1) Transcript, Vol. 26, p. 3830

(2) Same, Vol. 26, p. 3797

(3) Same, Vol. 26, p. 3812

Imports of basic lead sulphate are known to enter Canada from only two countries, the U.K. and the U.S.A. The spokesman for McArthur, Irwin said, "...we have practically never heard of American lead sulphate — basic lead sulphate — in the Canadian market".⁽¹⁾ Imports from the U.K. have not reached a value of even \$5,000 in any year since 1954 and a large part of these imports may be of other white leads, particularly lead carbonate. The elimination of these imports is not likely to have any substantial effect on the company's situation.

SODIUM SULPHATE

The Product and the Industry

Sodium sulphate neutral occurs in nature in the mineral forms such as glauberite, polyhalite and mirabilite which is a natural form of hydrated sodium sulphate (Glauber's salt). The mineral thenardite is a natural anhydrous form of sodium sulphate (salt cake). Sodium sulphate is also obtained as a by-product in the manufacture of hydrochloric acid, chromium salts, viscose and phenol.

The purity and physical characteristics of the product are determined partly by the process by which it is produced and partly by the degree of further purification and processing to which it is subjected. The by-product of the Mannheim hydrochloric acid process is yellowish; that obtained in the production of chromium salts is green, and that from phenol production is yellow. The latter two products are also known as chrome cake and phenol cake, respectively. In general, the white form, which is required in some applications, is initially produced as a by-product of the viscose process or from brines. However, the white, highly concentrated form can be produced from all of the less pure forms of sodium sulphate.

The term "saltcake" is commonly used to refer to the less pure anhydrous forms whether of natural or chemical origin, and the chemical name is generally used to refer to the purer forms. However, the term "saltcake" is not precisely defined. "Glauber's salt" is the correct designation only for the hydrated form but it is sometimes used as a general designation for both forms. The Canadian trade statistics include all of the sodium sulphate imported under tariff item 208t under this name. Imports under item 208t are of the relatively pure product, either hydrated or anhydrous.

The hydrated form of sodium sulphate is usually prepared in a very pure form which would meet specifications for pharmaceutical use. Glauber's salt is ruled to be produced in Canada, but its use in Canada is small, both in terms of quantity and value in comparison with the use of the anhydrous form. Glauber's salt is used mainly in the production of pharmaceuticals and in the dyeing of textiles.

In Canada, large deposits of sodium sulphate occur, mainly in Saskatchewan, in the form of brines and intermittent or permanent crystal beds. It is also produced by one company, Courtaulds Canada Limited, as a by-product of its viscose production, at Cornwall,

⁽¹⁾ Transcript, Vol. 26, p. 3817-8

Ontario. The Saskatchewan deposits account for by far the largest part of Canadian output. In the U.S.A., natural brines are an important source of sodium sulphate, but the by-products of viscose, hydrochloric acid and chromium salt production are nearly as important. Natural occurrences are unknown in Europe and most production there is as a by-product of chemical manufacturing processes.

In 1963, four companies in Canada produced sodium sulphate from natural deposits, at five locations in Saskatchewan. Their location and estimated capacity are given below.

<u>Company</u>	<u>Plant Location</u>	<u>Tons Annual Capacity</u>
Midwest Chemicals Ltd.	Palo	100,000
Ormiston Mining & Smelting Co. Ltd.	Ormiston	75,000
Sybouts Sodium Sulphate Co. Ltd.	Gladmar	30,000
Saskatchewan Minerals, Sodium Sulphate Division	Chaplin	150,000
	Bishopric	50,000
		405,000

Source: Canadian Minerals Yearbook, 1963

In August of 1965 it was announced that a new sodium sulphate plant would be constructed near Alsask, Saskatchewan with a capacity for 50,000 tons annually. A month later the Saskatchewan Government said it would build a plant at Ingebright Lake with an initial capacity of 150,000 tons annually. The latter plant was expected to begin production early in 1967. The two plants would increase Saskatchewan capacity by 50 per cent, to approximately 600,000 tons annually.

Sodium sulphate has been produced continuously in Saskatchewan since 1919. The product is usually sold in bulk and contains about 97 per cent of sodium sulphate. In 1963, the Saskatchewan plants shipped 257,000 tons of anhydrous sodium sulphate and, in 1964, 330,000 tons valued at \$5.3 million. In addition Courtaulds also produces "a few thousand tons of by-product salt cake annually". The Department of Mines and Technical Surveys states that "Shipments by Courtaulds are normally less than 5 per cent of the natural-salt-cake output".⁽¹⁾ Courtaulds began production in volume in 1955.⁽²⁾

Anhydrous sodium sulphate is available commercially in a wide range of qualities from a fairly crude material whose impurities impart to the product a colour undesirable for some applications to an extremely pure, highly concentrated form used in pharmaceuticals and photographic chemicals. The less pure forms find their principal use in the manufacture of pulp and paper (more than 95 per cent of the total); the more refined forms are used mainly in the manufacture of glass, chemicals and detergents. For use by the latter three industries, both relatively high purity and high concentration is demanded. The Canadian Minerals Yearbook states:

⁽¹⁾ Canadian Minerals Yearbook, 1960

⁽²⁾ Transcript, Vol. 26, p. 3904

"The physical and chemical specifications for sodium sulphate vary. Material of 95 per cent Na_2SO_4 [sodium sulphate] content has been used for the production of kraft paper, but higher grades are desirable. Glass, detergent and chemicals require grades of about 98 per cent. Fine chemicals and medicinal products call for grades above 99 per cent.

"For detergents, grain size, uniformity and free-flowing characteristics are important in handling and use, and a high degree of whiteness is desired."(1)

Almost all of the sodium sulphate produced in Saskatchewan is sold for the production of pulp and paper; in general, it is not sufficiently pure for use in glass and detergents. A large part of Courtaulds' production is also sold to paper manufacturers, but some of the output is refined to higher specifications and is sold to glass, detergent and other manufacturers. The highly purified form which is suitable for use in pharmaceuticals and photographic chemicals was not produced in Canada at the time of the hearing but at the beginning of 1964 it was ruled to be made in Canada.

The Market

The market in Canada for the less pure forms of anhydrous sodium sulphate (saltcake) has been expanding in recent years. In 1964, Canada consumed 254,000 tons valued at \$4.2 million most of which was supplied from Saskatchewan production. In addition, Canada consumes annually between 500 and 1,000 tons of highly refined anhydrous and hydrated material annually, valued at around \$20,000 to \$30,000, all of which was imported, until recently, mainly from West Germany and the U.S.A.

Apparent Domestic Disappearance of Natural Sodium Sulphate (Saltcake) 1959-64

	<u>Shipments</u>	<u>Imports</u> ^(a)	<u>Exports</u>	<u>Domestic Disappearance</u>	
	- thousand tons -			'000 tons	\$ '000 ^(b)
1959	180	27	48	159	2,641
1960	214	25	64	175	2,895
1961	251	32	87	196	3,281
1962	247	31	74	204	3,352
1963	257	19	65	211	3,430
1964	330	31	107	254	4,151

(a) Imports of saltcake, s.c. 8363; excludes imports of pure forms, s.c. 8343

(b) Value f.o.b. works or point of shipment

Source: D.B.S., Various publications; Canadian Minerals Yearbook

(1) Canadian Minerals Yearbook, 1962

Canadian production and shipments of sodium sulphate from natural occurrences have been increasing steadily for many years; in 1964 shipments from Saskatchewan were twice as large as in 1954. Production of by-product sodium sulphate by Courtaulds varies with the company's output of viscose and shipments of by-product sodium sulphate were substantially smaller in the early sixties than in preceding years.

In Canada, the principal use of sodium sulphate is in the production of pulp and paper. The Canadian Minerals Yearbook 1961 states that:

"More than 95 per cent of the sodium sulphate consumed in Canada goes into kraft paper, to which it adds strength and toughness. Some is used in the manufacture of newsprint, where an increase in wet-strength permits the operation of production machinery at higher speed..."

Consumption by the paper industry has been increasing. In 1963, the industry used almost 98 per cent of the known consumption. The pulp and paper industry can use a relatively impure product but a more highly refined material is preferred. Cost appears to be the main consideration in this industry's choice of grade.

Other important consumers are the glass and detergent industries. These require a more highly concentrated product and impurities which impart colour to the product are undesirable for use in detergents.

Consumption of Sodium Sulphate,^(a) by Industry,
1957-63

	Pulp & Paper	Glass	Deter- gents - tons -	Mineral Wool	Medicinal Products	Total	
						'000 tons	\$'000 ^(b)
1957	160,042	2,111	1,252	271	67	164	5,383
1958	165,000	2,357	814	288	52	169	5,544
1959	168,000	2,879	952	335	54	172	5,851
1960	178,000	2,813	1,394	352	54	183	5,901
1961	193,000	2,756	517	300 ^(c)	52	197 ^(d)	6,345 ^(d)
1962	200,166	3,025	1,136	259	56	205	6,566
1963	221,107	3,035	958	306	71	226 ^(e)	7,232 ^(d)

(a) Includes consumption of all forms

(b) Inclusive of freight charges to consuming locations

(c) Estimated

(d) Partly estimated

(e) Includes 200 tons for explosives and ammunition

Source: D.B.S., various publications

The pulp and paper industry is located largely east of Manitoba and in British Columbia; most of the other users of sodium

sulphate are situated in Ontario and Quebec. Thus, except for the relatively small output by Courtaulds, at Cornwall, Ontario, all of the Canadian production is in Saskatchewan and most of the Canadian use is at a considerable distance from there. The spokesman for Courtaulds said that most of the company's sales were in the area between Samia, Ontario and Quebec City, Quebec.

In Canada, sodium sulphate is sold f.o.b. plant in Saskatchewan or at Cornwall. The less pure material is sold in bulk; the more refined product, for use in detergents or glass, is sold in bulk or in bags. Four grades of Canadian-produced material are recognized in Canadian trade but individual sales may be on the basis of specifications supplied by a buyer or from samples. The known Canadian grades are Western saltcake, Eastern saltcake, Detergent and Textile. In addition, however, chemically pure, National Formulary and low nitrogen anhydrous grades are ruled to be made in Canada. Only Courtaulds is known to sell grades other than Western saltcake, the only grade sold by the Saskatchewan producers. The prices per ton of four grades, at February 1, 1961, in carload lots, are given below. The Canadian grades generally correspond to grades available in the U.S.A.

Canadian Western saltcake	\$16.50	in bulk
Eastern (Cornwall)saltcake	26.50	in bulk
Cornwall detergent grade	34.00	in bulk
	37.00	bagged
Cornwall textile grade	47.00	bagged

Source: Transcript, Vol. 26, p. 3854; Canadian Chemical Processing

U.S.P. crystals and a National Formulary grade, in 1961, were priced at \$17.50 per 100 pounds (equivalent to \$350 per ton) and \$22.50 per 100 pounds (equivalent to \$450 per ton) respectively, in the U.S.A. Prices in the U.S.A., for these forms, were generally unchanged between 1961 and 1965. Canadian prices are published only for Western saltcake. In 1965, the Canadian price of Western saltcake, f.o.b. producing points, was unchanged at \$16.50 a ton. In the U.S.A., the comparable price of U.S.-produced Western saltcake was \$U.S. 22.50 a ton, equivalent to \$Can. 24.30. The U.S. price of the technical, detergent rayon grade, in 1965, was \$U.S. 34 a ton, bulk carloads, at works.

Because most Canadian consumption occurs at a great distance from either domestic or foreign sources of supply, freight is an item of considerable importance to consumers. Saltcake produced in Saskatchewan incurs a freight cost of \$15.80 per ton either to Toronto or Montreal. This makes the delivered cost to these centres almost double the price of \$16.50 per ton, f.o.b. works. Freight costs to consumers in the Atlantic Provinces and British Columbia are higher.

In 1963, Canada consumed about 226,000 tons of saltcake which had, at point of shipment, an average value of just over \$16 a ton. On the other hand, consumers reported the cost of this material at their consuming locations to be, on average, \$32 a ton. Thus it would appear that the average costs of handling and shipment are about as much as the f.o.b. cost of the product.

Foreign Trade

Canada's exports of saltcake are much larger than the imports. Surplus production occurs only in Saskatchewan and all exports are to the U.S.A. In 1964, exports were more than three times as large as imports in that year. Canadian saltcake is entered into the U.S.A., free of duty.

Exports and Imports of Sodium Sulphate (Saltcake), Selected Years, 1955-64

	<u>Exports</u>		<u>Imports</u>		<u>Net Exports (a)</u>	
	'000 tons	\$ '000	'000 tons	\$ '000	'000 tons	\$ '000
1955	77	1,264	30	574	47	690
1957	37	593	28	511	9	82
1959	48	752	27	511	21	241
1961	87	1,331	32	575	55	756
1962	74	1,211	31	609	43	602
1963	65	1,077	19	386	46	691
1964	107	1,776	31	599	76	1,177

(a) Exports minus imports

Source: D.B.S., Trade of Canada, Exports, s.c. 404-63; Trade of Canada, Imports, s.c. 8363, before 1961 s.c. 8387 and s.c. 404-62

Imports of saltcake have generally been between 25,000 and 30,000 tons annually, during the past decade. About two thirds of the imports are from the U.S.A. and almost all of the remainder are from Britain. The decline in imports in 1963 was almost entirely due to the reduced amounts entered in British Columbia.

Imports of saltcake are entered largely in British Columbia, and most of the remainder in New Brunswick and Quebec. In 1962 and 1963, about 80 per cent of all imports were entered in British Columbia and New Brunswick. Except for a few tons from West Germany, imports into British Columbia were entirely from the U.S.A. All imports entered in New Brunswick and Quebec originated in the U.K. The average value of the relatively small amounts entered in Ontario, all from the U.S.A., suggests that a large part was of higher grades for use in applications that require a product of relatively high purity.

Until fairly recently, the principal suppliers of the hydrated form and the highly refined grades were West Germany and the U.S.A. Imports of these grades have been declining for several years, and in 1963 they were less than one tenth the quantity imported in 1954, ten years previously. As noted earlier, these products were not available for sale from Canadian production until recently. The chemically pure forms were ruled to be made in Canada in January 1964. The decline in imports coincides with the start of volume production of sodium sulphate by Courtaulds, in 1955. Moreover, the average value of imports of these products has been increasing, although prices

of individual products have been stable, suggesting that a larger proportion of the imports are of the pharmaceutical grade; the average value of these imports is very much higher than that of imports of saltcake.

Imports of Sodium Sulphate (Saltcake) by Province of Entry,
1962 and 1963

	<u>N.B.</u>	<u>Que.</u>	<u>Ont.</u> 1962 tons	<u>Sask.</u>	<u>B.C.</u>	<u>Canada</u>
U.K.	4,818	4,257	-	-	-	9,075
U.S.A.	-	-	<u>1,649</u>	<u>16</u>	<u>20,606</u>	<u>22,272</u>
Total	4,818	4,257	1,649	16	20,606	31,347
<u>1963 tons</u>						
W. Ger.	-	-	-	-	17	17
U.K.	3,254	2,801	-	-	-	6,054
U.S.A.	-	-	<u>1,237</u>	<u>115</u>	<u>11,579</u>	<u>12,931</u>
Total	3,254	2,801	1,237	115	11,596	19,002

Source: D.B.S., s.c. 8363

Imports of Anhydrous Sodium Sulphate (Saltcake), by Country of Origin,
Selected Years, 1953-64

	<u>U.K.</u>		<u>U.S.A.</u>		<u>Total Imports</u>	
	'000 tons	\$/ton	'000 tons	\$/ton	'000 tons	\$ '000
1953	11.3	16	21.5	16	32.8	517
1955	11.1	20	18.9	18	29.9	574
1957	9.2	20	18.9	18	28.1	511
1959	9.1	22	18.1	16	27.2	511
1961	9.7	20	22.6	16	32.3(a)	575(a)
1962	9.1	24	22.3	18	31.3	609
1963	6.1	22	12.9	20	19.0(a)	386(a)
1964	8.9	21	21.5	19	30.8(b)	599(b)

(a) Includes very small amounts from Western Germany

(b) Includes very small amounts from Western Germany, the Netherlands and Poland

Source: D.B.S., Trade of Canada, Imports, s.c. 8363

Imports of Refined Grades of Anhydrous Sodium Sulphate^(a)
and Glauber's Salt, by Country of Origin,
Selected Years, 1953-63

	U.K.		West Germany		U.S.A.		Total	
	tons	\$/ton	tons	\$/ton	tons	\$/ton	tons	\$'000
1953	1	90	936	18	4,534	30	5,493	150
1955	-	-	778	26	3,105	36	3,888	131
1957	3	136	516	26	993	36	1,512	51
1959	1	416	562	30	403	56	966	40
1961	4	174	771	26	124	64	899	29
1962	4	176	129	38	294	58	426	23
1963	4	174	323	34	168	96	495	28

(a) The trade statistics designate all of these as "Glauber's Salt". However, they include all imports under tariff item 208t and some under item 711; therefore, they include both refined anhydrous and hydrated forms

Source: D.B.S., Trade of Canada, Imports, s.c. 8343

At the public hearing on sodium sulphate only Courtaulds referred to competition in the domestic market. Its spokesman said that a large part of the company's sales was of the saltcake grade and that freight costs provided adequate protection against competition from either natural or synthetic saltcake grades produced in the U.S.A. or Europe. He said that the company's output of saltcake grade was such a small proportion of the total requirements that Courtaulds had no difficulty in selling it at locations where the company had a freight advantage relative to producers in the U.S.A. or Europe.⁽¹⁾

As noted above, the Saskatchewan producers made no mention of foreign competition in the domestic market. Practically all imports are from the U.K. and the U.S.A., the latter supplying the British Columbia market almost exclusively, and the former supplying the Atlantic Provinces and Quebec.

At the time of the hearing, February 1961, saltcake from the U.K. could be delivered in Montreal at \$36.20 a ton and in Toronto at \$43.60 a ton.⁽²⁾ The comparable laid-down cost of Canadian Western saltcake based on published prices, was \$32.30 a ton at both destinations. Thus, for sales in Central Canada, Saskatchewan producers had an advantage of \$3.90 a ton at Montreal and of \$11.30 a ton at Toronto. Relative to the f.o.b. price of Western Canadian saltcake of \$16.50 a ton, this would be an advantage of 24 p.c. at Montreal and 68 p.c. at Toronto.

Thus, it appears that Canadian Western saltcake can be laid down in most of the market east of Manitoba at a substantially lower cost than saltcake from the U.K. or other European countries, even

(1) Transcript, Vol. 26, p. 3852-3

(2) Same, Vol. 26, p. 3854

without duty. Imports from the U.K. would appear to be for the use of paper mills in the Atlantic Provinces or in eastern Quebec. Moreover, although Courtaulds' saltcake was priced at \$26.50 a ton f.o.b. plant, \$10 a ton more than Western saltcake, the laid-down price at Montreal was \$32.30 a ton, the same as the laid-down price of the Saskatchewan material.

In British Columbia, Saskatchewan producers compete with natural saltcake produced in California. The California product is shipped by water, and freight costs are substantially less than the cost of the overland rail haul from Saskatchewan to British Columbia points of consumption. The f.o.b. price of U.S. Western saltcake is about the same as for the Saskatchewan saltcake so that the California producer has a substantial advantage in the British Columbia market. Imports entered in British Columbia were about 12,000 tons in 1963, and exports from Saskatchewan to the U.S.A. were 65,000 tons. Thus the trade with the U.S.A., appears to be complementary, the flow being regulated partly by costs of freight and partly by the existing tariffs. Imports of saltcake from the U.S.A. are dutiable at \$4 a ton (about 24 p.c. ad valorem) while exports to the U.S.A. are entered free of duty.

With respect to the more refined products, the spokesman for Courtaulds said:

"Looking at the 'sodium sulphate' market, served only by the chemically-produced product, the competitive situation is quite different. Here we are faced with competition from the United States, where sodium sulphate production points are within economic shipping distance of Canadian-consuming points. The same is also true of shipments from overseas, in particular from Germany".⁽¹⁾

In support of this statement he submitted data on freight rates and prices. These showed that Courtaulds had a very substantial advantage over all competitors on deliveries to Montreal. On deliveries to Toronto the company had a considerable advantage over the U.K. and German product but a much smaller advantage over suppliers in the U.S.A. Courtaulds' advantage over the potential U.S. supplier of the detergent grade, in the Toronto area, was equivalent to a duty of about 4.5 to 5.0 p.c., and on the textile grade to a duty of about 11.5 per cent. Although these data suggest that most imports would be entered in Ontario, where the margin of advantage was smallest, in fact entries into Ontario were only about 111 tons out of a total of 495 tons of refined grades imported in 1963.

It is difficult to compare the delivered prices of Courtaulds' products and those of foreign origin. The prices of the grades Courtaulds sells were substantially higher than those submitted for corresponding grades of U.K. or German origin but tended to be closer to prices in the U.S.A. For example, Courtaulds' price, in 1961, for the detergent grade was said to be \$34 a ton, in bulk, compared with an f.o.b. price for this grade of \$24.95 in the U.K., \$20.15 in Germany and \$31.84 in the U.S.A. For the textile grade, on which Courtaulds

⁽¹⁾ Transcript, Vol. 26, p. 3853

has a larger freight advantage relative to the nearest competitor in the U.S.A., the price f.o.b. Cornwall was \$47 a ton and f.o.b. the supplier in the U.S.A. it was \$Can. 40.80 a ton.

Freight Cost to Montreal and Toronto, from Cornwall, Ont., and
Potential Foreign Suppliers, at February 1, 1961

<u>From</u>	<u>Toronto</u>		<u>Montreal</u>	
	<u>Bulk</u>	<u>Bags</u> dollars per ton	<u>Bulk</u>	<u>Bags</u>
Cornwall, Ont.	10.40	10.40	5.80	5.80
German Ports	28.80	..	17.60	..
U.K. Ports	23.60	24.10	16.20	16.20
U.S.A. (Deterg. Grade)	12.00	12.00	..	..
U.S.A. (Textile Grade)	..	<u>15.80</u>	..	<u>16.80</u>
Maximum Cornwall Advantage	18.40	13.70	11.80	11.00
Minimum Cornwall Advantage	1.60	1.60	10.40	10.40

Source: Transcript, Vol. 26, p. 3854

Tariff Considerations

Chemically pure, National Formulary and anhydrous, low nitrogen grades of sodium sulphate were ruled to be made in Canada effective January 6th, 1964 and are entered under tariff item 711 at rates of 15 p.c., B.P. and 20 p.c., M.F.N. Until that date these grades were entered under item 208t at rates of Free, B.P. and 15 p.c., M.F.N. The chemical tests used by the Department of National Revenue allow entry under item 711 of only the very pure grades, suitable for pharmaceutical or photographic use. Crude sodium sulphate is entered under item 210d, "sodium, sulphate of, crude or saltcake". Under item 210d, the same specific rate applies under both the B.P. and M.F.N. Tariffs, namely 1/5 cent per pound (\$4 a ton). The ad valorem equivalent of this specific rate is between 20 and 25 p.c. Sodium sulphate may be entered duty-free under tariff item 851, when for use in the manufacture of synthetic rubber.

In the Brussels Tariff Nomenclature, natural sodium sulphates are classified under heading 25.32, "mineral substances not elsewhere specified or included". Excluded from the definition of a mineral product are substances subjected to the process of crystallization. The "Explanatory Notes" state:

"this Chapter [25] covers mineral products only in the crude state or washed,...crushed, ground, powdered, levigated, sifted, screened or concentrated by flotation, magnetic separation and other mechanical or physical processes (not including crystallization). Minerals which have been otherwise processed (e.g. purified by re-crystallization, ...) generally fall within later Chapters (for example, Chapters 28...)." (1)

(1) Explanatory Notes to the Brussels Nomenclature 1955, p. 107

From the description given in the Canadian Minerals Yearbook of the processes used by the Saskatchewan producers, it appears that the product made in Canada from natural deposits would be classified under heading 28.38 as a chemical and not under heading 25.32 as a mineral. The sodium sulphate produced by Courtaulds would also be classified by heading 28.38.

The saltcake imported from the U.S.A. is produced from brines, like the Saskatchewan product, or is a by-product of chemical processes. In Europe, natural deposits are unknown. Thus it is probable that all imports into Canada would be classified by the B.T.N., under heading 28.38.

However, at the public hearing the Industry Committee was of the opinion that saltcake produced in Saskatchewan from natural brines would be classified under B.T.N. heading 25.32, and only the by-product of chemical processes would be under heading 28.38. With this in mind the spokesman for the Committee proposed:

"In order to retain the meaning of Brussels Nomenclature for heading 28.38 insofar as it relates to sodium sulphate, the Committee recommends that only the man-made product be accorded duty treatment under this heading and that natural sodium sulphate be subject to tariff treatment by some item outside the chemical schedule".(1)

Further discussions with the Industry Committee and consultation with authorities on the Brussels Nomenclature indicate that saltcake produced from brines would be classified under heading 28.38.

At the public hearing in February 1961, Courtaulds Canada Limited proposed that all forms of sodium sulphate that would be classified by B.T.N. headings 25.32 and 28.38 should be dutiable at \$4.00 a ton, under both the B.P. and M.F.N. Tariffs.(2)

Saskatchewan Minerals, the largest producer in Canada, strongly urged that there be no increase in the rates on any type of sodium sulphate.(3)

Midwest Chemicals Limited, Ormiston Mining and Smelting Company Limited and Sybouts Sodium Sulphate Company Limited, the other Saskatchewan producers, supported the position of Courtaulds.(4) Sybouts said the provisions for drawback of duty under the Customs Tariff Act for goods exported is of greater importance than the existing Tariff and recommended that the Board consider the problem of this dilution of the protection afforded by the Tariff.(5)

Polymer Corporation Limited listed sodium sulphate as a raw material used by the company and requested that the end-use provisions

(1) Transcript, Vol. 25, p. 3623

(2) Same, Vol. 26, p. 3841, 3855

(3) Same, Vol. 26, p. 3918

(4) Same, Vol. 26, p. 3919-20-21

(5) Same, Vol. 26, p. 3922

of item 851 be continued, with free entry under all Tariffs for materials used in the production of synthetic rubber.(1)

The Canadian Pulp and Paper Association listed sodium sulphate (saltcake) as an important raw material used by its members and said it strongly opposed any revision which would result in an increase, either now or in the future, in respect of chemicals used by the pulp and paper industry.(2)

The Canadian Pharmaceutical Manufacturers Association named sodium sulphate as a material of relatively small economic importance to its members and recommended rates of Free, B.P. and 15 p.c., M.F.N., until ruled to be made in Canada, for chemicals used in the production of pharmaceuticals. When a product is ruled to be made in Canada, rates of 15 p.c., B.P. and 20 p.c., M.F.N., were recommended.(3)

No other representations were made to the Board related specifically to sodium sulphate.

Thus the following proposals were before the Board. Courtaulds, Midwest Chemicals, Ormiston Mining and Smelting and Sybouts agreed that a specific rate of \$4 a ton, under both the B.P. and M.F.N. Tariffs, should apply to all the sodium sulphate classified by headings 25.32 and 28.38 of the B.T.N. Saskatchewan Minerals and the Pulp and Paper Association opposed any increase in rates. The existing rates are equivalent to \$4 a ton so that there was, in essence, no disagreement between the two groups, regarding the rates.

Polymer and the Pharmaceutical Manufacturers Association proposed end-use treatment for sodium sulphate. The former recommended free entry under all Tariffs; the latter urged rates of Free, B.P. and 15 p.c., M.F.N., until it is ruled to be made in Canada, and rates of 15 p.c., B.P. and 20 p.c., M.F.N., thereafter. Because virtually all forms are now deemed to be made in Canada, the proposal, in effect, was for rates of 15 p.c., B.P., 20 p.c., M.F.N., the existing rates under item 711. For the much larger imports of the less pure forms, under tariff item 210d, the ad valorem equivalent of the present \$4 per ton has been between 20 and 25 p.c.

Sodium sulphate of high purity and concentration is entered under item 711. The available information indicates that the hydrated form, Glauber's salt, is also entered under this item. If the recommendations of Courtaulds and its supporters were implemented all of these products would be subject to a duty of 1/5 cent per pound or \$4 a ton under both the B.P. and M.F.N. Tariffs. If these recommended rates had been applied to imports in the years 1960-63, the duty collected, expressed as a percentage of dutiable value, would generally have been lower than the ad valorem rate applicable under item 711. Imports from the U.K. would have been dutiable at a slightly higher rate in two years, but imports from Britain have been very small and have not exceeded four tons in any year of the past decade.

(1) Transcript, Vol. 89, p. 13587

(2) Same, Vol. 36, p. 5246; Vol. 85, p. 13005

(3) Same, Vol. 87, p. 13321

Ad Valorem Equivalent of a Duty of \$4 per Ton
On Imports of Glauber's Salt and Pharmaceutical Grade Anhydrous
Sodium Sulphate, Compared with Ad Valorem Equivalent of Duty
Actually Collected, 1960-63

	<u>Western Germany</u>		<u>U.S.A.</u>		<u>U.K.</u>		<u>All Imports</u>	
	<u>Actual</u>	<u>Proposed</u>	<u>Actual</u>	<u>Proposed</u>	<u>Actual</u>	<u>Proposed</u>	<u>Actual</u>	<u>Proposed</u>
duty collected as per cent of dutiable value of imports								
1960	15.0	16.3	16.3	6.8	0	2.2	15.6	12.0
1961	15.0	15.0	15.2	6.3	0	2.4	15.1	12.4
1962	15.0	10.8	15.4	6.9	14.8	2.5	15.3	7.5
1963	15.0	11.4	15.3	4.1	0	2.3	15.2	7.1

Source: Calculated from published import data

The anhydrous sodium sulphate that is sufficiently pure to be classified under item 711 is priced much higher than the grades that would normally be entered under item 210d. The lowest grade that might qualify for entry under item 711 would be the Technical Anhydrous which was priced at \$56 a ton, in the U.S.A., in mid-1964. A duty of \$4 a ton would be equivalent to a rate of approximately 7 p.c. Thus the main effects of the Courtaulds proposals on imports of the highly refined product would be to reduce the duty on imports from M.F.N. countries and to eliminate the existing British preference.

Courtaulds proposed the retention of the rates under item 210d for the less pure forms of anhydrous sodium sulphate (saltcake) which constitute more than 95 per cent of Canadian imports of all forms of sodium sulphate. The ad valorem equivalent of the existing duty of \$4 a ton is shown below for the five years, 1958-63.

Duty Collected as Per Cent of Value of Dutiable Imports
of Anhydrous Sodium Sulphate, Saltcake, 1958-63

	<u>U.K.</u>	<u>U.S.A.</u>	<u>Western Germany</u>	<u>Total Imports</u>
			- per cent -	
1958	19.8	22.7	-	21.6
1959	18.2	23.2	-	21.3
1960	18.6	23.1	17.1	20.9
1961	19.2	24.3	13.1	22.5
1962	17.3	22.3	-	20.6
1963	18.7	20.3	13.5	19.7

Source: D.B.S., Trade of Canada, Imports, s.c. 8363

As the preceding analysis indicates, the proposals of the producers would not affect the rates under item 210d, under which more than 95 per cent of imports are entered and would result in lower rates for imports of Glauber's salt and of the anhydrous pharmaceutical

grades. Thus they would presumably be acceptable to Saskatchewan Minerals and the Canadian Pulp and Paper Association, both of which urged that there be no increase in the existing rates. They would probably also be acceptable to the pharmaceutical manufacturers who would tend to benefit from lower rates than they themselves had proposed. The end-use proposal of Polymer for continuation of the provisions of item 851 would therefore be the only other recommendation, and it was couched in general terms, not related only to sodium sulphate.

The spokesman for Courtaulds emphasized the difficulty of defining "saltcake". He was supported by other producers in the recommendation that uniformity of rates for all grades would eliminate doubts as to classification and simplify administrative procedures. The use of the B.T.N. which was recommended by Courtaulds would result in virtually all the sodium sulphate and Glauber's salt of Canadian commerce being classified under an item worded like heading 28.38.

Courtaulds' support of its rate proposals was based mainly on the argument that \$4 a ton was a reasonable level of protection and would cause little disturbance to the status quo. The Saskatchewan producers who supported the company apparently agreed.

As indicated in the preceding analysis, Canada is a large exporter of saltcake which is entered free of duty into the U.S.A., a very important and growing market for Canadian production.

In this connection the brief of Saskatchewan Minerals, the largest producer in Canada, stated:

"To date the majority of shipments have been made to Canadian consumers, but latterly the ratio of exports to the United States has increased rapidly and presently represents 40 per cent of...total sales...we are confident that our sales to the United States will increase in the future...

"In our opinion the most important factor in maintaining our competitive position results from the fact that Canadian saltcake presently enters the United States duty free. If, however, the United States authorities saw fit to impose a tariff against Canadian salt-cake, even at a modest level, we would no longer be competitive with United States producers of the natural product and this increasing market would be closed to us."(1)

Courtaulds' competitive position is different from that of the natural saltcake producers. The company has recovered by-product sodium sulphate, in volume, only since 1955 and according to its spokesman has a virtually unlimited market for the saltcake grade. The Courtaulds' price for this grade was \$26.50 a ton, f.o.b. plant, in 1961, compared with \$16.50 a ton, f.o.b. Saskatchewan points, for natural saltcake.

The company claimed that it met serious competition in its sales of the more refined, detergent and textile grades from producers

(1) Transcript, Vol. 26, p. 3918

in the U.S.A. and Germany. At least at the time of the hearing, Courtaulds did not manufacture the very pure grade of sodium sulphate that represents almost all of the imports from Germany, which in total were less than 350 tons in 1963.

Imports from the U.S.A. are entered almost entirely in British Columbia. In 1963, only 1,237 tons of saltcake and 163 tons of Glauber's salt were entered from the U.S.A., into provinces east of Saskatchewan. Almost all of this was into Ontario. Courtaulds has a freight advantage of only \$1.60 a ton relative to one United States producer on deliveries of the detergent grade to Toronto, exclusive of duty. The company's freight advantage on the textile grade varies from \$5.40 to \$18.40 a ton at Toronto and from \$11 to \$11.80 a ton at Montreal.

ALUMINUM AMMONIUM SULPHATE AND ALUMINUM POTASSIUM SULPHATE

Aluminum ammonium sulphate and aluminum potassium sulphate are both members of the group of chemicals called "alums". Both are used mainly as mordants in the dyeing of furs and both are used in the production of cheap, mass-produced, molded statuary. Neither is produced in Canada.

The Canadian market absorbs approximately 1,000 tons annually, valued at about \$55,000 to \$75,000. Britain is the major supplier and in most years has accounted for one half to three quarters of Canadian imports. The spokesman for Peter Spence and Sons Limited, a major British supplier, said that both alums were gradually passing out of use because of the availability of lower priced and better substitutes. (1)

Imports of Alum in Bulk, Ground or Unground, But Not Calcined, by Country of Origin, Selected Years, 1953-63

	<u>U.K.</u>	<u>Western Germany</u> - tons -	<u>U.S.A.</u>	<u>Total(a)</u> tons	\$ '000
1953	210	220	275	705	49.7
1955	555	-	475	1,033	75.6
1957	750	5	305	1,074	77.6
1959	620	104	271	1,011	71.6
1961	653	119	137	953	63.6
1962	505	113	163	781	54.7
1963	480	142	269	952	60.3

(a) Includes relatively small amounts from other countries, mainly Eastern Germany

Source: D.B.S., Trade of Canada, Imports, s.c. 8251

Tariff Considerations

The alums, including aluminum ammonium sulphate and aluminum potassium sulphate, when not calcined, are entered under tariff item 212 at rates of Free, B.P. and 10 p.c., M.F.N. When calcined, they are dutiable at rates of Free, B.P. and 15 p.c., M.F.N., under item 208t.

<u>Item</u>	<u>British Preferential Tariff</u>	<u>Most- Favoured- Nation Tariff</u>
<u>Item 212</u>		
Sulphate of alumina or alum cake, and alum in bulk, ground or unground, but not calcined.....	Free	10 p.c.
<u>Item 208t</u>		
All chemicals...n.o.p., of a kind not produced in Canada.....	Free	15 p.c.

At the hearing in February 1961, it was said that calcined alum was not a commercial commodity, but an intermediate for the manufacture of alumina (aluminum oxide) for special purposes.⁽¹⁾

Peter Spence and Sons Limited urged that the existing rates be retained. However, the company spokesman was under the impression that the relevant tariff item was 208t and requested maintenance of rates of Free, B.P. and 15 p.c., M.F.N., the rates under that item.⁽²⁾ The spokesman for Canadian Industries Limited, which imports alums for resale in Canada, informed the Board that C.I.L. imported alums under item 212.⁽³⁾

The Canadian Pharmaceutical Manufacturers Association listed aluminum ammonium sulphate and aluminum potassium sulphate as chemicals of minor economic importance used by its members. The spokesman for the Association proposed rates of Free, B.P. and 15 p.c., M.F.N., for chemicals not made in Canada, which were used in the manufacture of pharmaceuticals.⁽⁴⁾ He did not indicate why these rates were appropriate specifically for the two products.

The spokesman for Peter Spence and Sons said that an increase in the existing rates would only be reflected in higher costs to Canadian users to cover the additional duty. He urged that the existing margin of British preference be retained.

No other representations were made to the Board regarding these two products.

(1) Transcript, Vol. 25, p. 3733

(2) Same, Vol. 25, p. 3722

(3) Same, Vol. 25, p. 3734

(4) Same, Vol. 87, p. 13321

BARIUM SULPHATE

Barium sulphate occurs in nature as the mineral barite which frequently contains 90 per cent or more of barium sulphate. It is also produced by chemical processes, in greater degrees of purity, up to an extremely pure form which is used in X-ray diagnosis. The mineral form is used largely in the preparation of oil well drilling muds but it is also used as a filler, in fairly large quantities, by the rubber industry and as an extender and filler by the paint and pigment industry. Paints and pigments also account for most of the consumption of the chemically-produced form (blanc fixé). The principal use of the very pure forms, which meet the specifications of the U.S. and British Pharmacopoeia, is in X-ray diagnosis. In Canada, only the mineral form is produced and it is either exported for further refining or is used in oil well drilling.

The Department of Mines and Technical Surveys makes the following comments on barite and barium sulphate.

"Most barite is used because of its physical properties, which include a high specific gravity of at least 4.3, inertness under normal conditions and, on occasion, whiteness. There is a small demand for barite in the chemical industry, where it is used as a source of the element barium.

"In 1962, 79 per cent of the barite consumed in Canada was used as a heavy medium in oil- and gas-well drilling. Normally about 90 per cent of the North American requirement and most of the world's needs are for that purpose. In well drilling, this commodity assists in controlling pressure and in forcing drill cuttings to the surface. It is the most desirable material for this purpose and is not likely to be replaced to any extent in the near future by other heavy media. Although new drilling techniques have been adopted in North America in recent years, there has been no noticeable effect on barite consumption. Specifications for this use commonly require a minimum specific gravity of 4.20 to 4.25 and a particle size of at least 90 per cent minus 325 mesh.

"Fifteen per cent of domestic requirements involved the use of barite as a conventional type of filler in 1962. Most of this barite was used in paints but some found application in rubber, paper and miscellaneous products. Except for some rubber products, barite for filler purposes should normally have a high reflectivity, a minimum of 94 per cent barium sulphate, and a particle size of minus 200 mesh or smaller.

"About six per cent of Canada's consumption was used in glass manufacture, in which barite acts as a flux, increases the workability of the melt and adds luster to the product. Commonly, specifications require a minimum of 98 per cent barium sulphate, less than 0.15 per cent ferric oxide and a particle size of 20 to 200 mesh.

"Because the barium-chemicals industry is virtually non-existent in Canada, this industry's consumption of barite is minor and sporadic. The more common barium compounds

manufactured throughout the world and some of their applications are as follows: precipitated barium sulphate, or blanc fixe, used as an extender and pigment in paints and as a filler in paper; lithopone, a mixture of barium and zinc sulphate, employed as a white pigment in paints; barium chloride, for case-hardening and the prevention of scumming on brick; and barium carbonate, used for the reduction of scumming on brick and ceramics. Barium oxide, hydrate, titanate, chlorate, nitrate, sulphide and phosphate are also manufactured. Some of these chemicals are used as a source of barium metal. Because barium titanate has a high dielectric constant and piezoelectric and ferroelectric properties, its use in relatively minor amounts has become widespread. Barite for the manufacture of chemicals must be in lump form and contain a minimum of 94 per cent barium sulphate and a maximum of one per cent ferric oxide.

"Import and consumption statistics for some of the barium chemicals consumed in Canada are given in Table 4.

"Barite is also used to a minor extent as heavy aggregate in concrete employed as shielding against atomic radiation."(1)

The market in Canada for barium sulphate, the chemical form, is approximately 1,000 tons valued at about \$110,000 annually. The use of this form of the product has been relatively stable in the past five years (1959-63), although it is currently almost triple that of the preceding five-year period. Most of the increased Canadian use has been supplied by the U.S.A.

The import statistics combine blanc fixé (precipitated barium sulphate) with satin white (calcium sulphate). However, the spokesmen for the Canadian Paint Varnish and Lacquer Association indicated that the amount of satin white included would be negligible.(2)

Until 1959 Western Germany was the major supplier and accounted for more than half of the imports in most years. Belgium and Luxembourg, the U.K. and the U.S.A. shared the remainder. In 1959 imports from the U.S.A. increased sharply, and since that time about two thirds to three quarters of the much larger Canadian imports have originated in the U.S.A.; previously only about one quarter of the total was imported from the U.S.A.

In addition to the chemical form, large quantities of barite, the mineral, are used in Canada. Most of this is for drilling muds. However, substantial amounts are also used by the paint and rubber industries, and perhaps by others as well. Except for the paint industry, the consumption statistics do not distinguish between barite, the mineral form, and barium sulphate that is chemically produced.

(1) Canadian Minerals Yearbook, 1963

(2) Transcript, Vol. 25, p. 3762

Imports of Blanc Fixé and Satin White, by Principal Country
of Origin, Selected Years, 1953-63

	<u>U.K.</u>	<u>Western Germany</u>	<u>U.S.A.</u>	<u>Other</u> ^(a)	<u>Total</u>	
		tons			tons	\$'000
1953	6	184	33	40	262	19
1955	24	299	208	68	599	55
1957	29	215	101	26	371	42
1959	17	272	680	45	1,014	79
1961	15	323	787	19	1,144	101
1962	38	242	806	71	1,156	126
1963	21	124	786	71	1,001	108

(a) Includes Belgium and Luxembourg and the Netherlands

Source: D.B.S., Trade of Canada, Imports, s.c. 8184

Consumption of Barite, by Industry,
1959-63

	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>
	- tons -				
Well Drilling	21,000	23,809	17,011	8,873	8,419
Paints	698	953	984	1,343	1,683
Glass	356	364	412	628	768
Rubber Goods	173	218	361	492	178
Misc. Chemicals	65	23	80	73	148
Misc. Non-metallic Products	<u>112</u>	<u>116</u>	<u>9</u>	<u>10</u>	<u>147</u>
Total Accounted For	22,404	25,483	18,857	11,419	11,343

Source: Canadian Minerals Yearbook, 1962 and 1964; D.B.S., Various publications

The paint industry's use of precipitated barium sulphate (blanc fixé) varies considerably from year to year. The spokesman for the paint industry said that the statistics understate the industry's use of blanc fixé because a large quantity is already incorporated in pigments which paint manufacturers purchase. This industry also uses considerable quantities of lithopone (B.T.N. heading 32.07), a product which contains about 70 per cent of barium sulphate.

The barium sulphate used in X-ray diagnosis is of a purity which makes it a distinctive product. The discussion at the public hearing indicated that manufacturers who produce the chemical form do not ordinarily make the U.S.P. grade. The spokesman for Mallinckrodt Chemical Works Limited said his company imported the U.S.P. grade from the parent company in the U.S.A. for distribution in Canada; its U.S. parent company is the only producer of this grade in the U.S.A. Laporte Chemicals Canada Limited, which also distributes this product in Canada, obtains its supplies from the Laporte Company in Britain.

Comparison of Imports of Blanc Fixé with Consumption of
Blanc Fixe by the Paint Industry, Selected Years 1955-63

	<u>Used by Paint Industry</u>	<u>Unaccounted(a)</u> - tons -	<u>Total Use (Imports)</u>
1955	450	149	599
1957	301	70	371
1958	176	272	448
1959	495	519	1,014
1960	284	921	1,205
1961	239	905	1,144
1962	269	887	1,156
1963	..	..	1,001

(a) By subtraction

Source: D.B.S., Trade of Canada, Imports, s.c. 8184 and The Paint and Varnish Industry, Catalogue No. 46-210

Prices of barium sulphate vary from about $3\frac{1}{2}$ cents a pound for the ground mineral to about 20 cents a pound for the U.S.P. grade. Blanc fixé, the precipitated form, is priced at about eight cents a pound. Prices are not published in Canada. The following table shows published prices in the U.S.A.

Prices of Barite, Blanc Fixé and X-ray Grade of
Barium Sulphate, in the U.S.A., 1959-65

	<u>Barite, white Water Gnd., Paper Bags, in Carloads at St. Louis</u> \$ per ton	<u>Blanc Fixé Dry, Direct Process, Bags, Carloads at Works</u> \$ per ton	<u>Barium Sulphate X-ray Grade, in 100 lb. Drums</u> ¢ per lb.
1959	55.00	145.00	19-19.5
1960	55.00 - 60.00	145.00 - 160.00	15-19.5
1961	60.00	160.00	19
1962	63.00	160.00	19
1963	63.00	160.00	19
1964	63.00 - 66.00	160.00	19
1965	66.00	156.00 - 175.00	19

Jan.-Aug.

Source: Oil, Paint and Drug Reporter

Tariff Considerations

Barium sulphate is entered under tariff items 240 and 683.

	<u>British Preferential Tariff</u>	<u>Most- Favoured- Nation Tariff</u>
<u>Item 240 (in part):</u>		
...blanc fixe; satin white.....	Free	10 p.c.
<u>Item 683</u>		
Barytes.....	Free	20 p.c.

It is also imported under end-use item 848b, which provides free entry under all Tariffs for materials for use in the manufacture of drilling mud for drilling for potash and rock salt. The material that would be imported under this item would be relatively impure.

In the B.T.N., natural forms of barium sulphate are classified under heading 25.11. The forms which are under heading 28.38 are "obtained by precipitating a solution of barium chloride with sulphuric acid or an alkali sulphate".⁽¹⁾ This definition would also apply to the barium sulphate which is entered under item 240, whether it consists of the extremely pure diagnostic grade, or the less pure form used by the paint industry (blanc fixe). Thus the barium sulphate of heading 28.38 would appear to coincide with that classified under tariff item 240.

Items 683 and 848b are outside the terms of the current inquiry. The discussion which follows deals with barium sulphate imported under item 240; this is the chemically-produced form obtained by precipitation from a solution.

At the public hearing, in February 1961, Mallinckrodt Chemical Works Limited urged that the existing rates for the X-ray grade of barium sulphate under item 240 should not be increased. The company spokesman said he "would be quite happy to see it accorded duty-free treatment" until it is produced in Canada. When it is produced in Canada, he urged the application of rates of 15 p.c., B.P. and 20 p.c., M.F.N.⁽²⁾

Laporte Chemicals Canada Limited generally supported the stand of Mallinckrodt. However, Laporte's proposal was for retention of the existing rates under item 240 with no qualification regarding the product's made-in-Canada status. Laporte indicated that its principal interest was also in the X-ray grade.⁽³⁾

⁽¹⁾ Explanatory Notes to the Brussels Nomenclature, 1955, p. 190

⁽²⁾ Transcript, Vol. 25, p. 3749-50

⁽³⁾ Same, Vol. 25, p. 3758

The Canadian Paint Varnish and Lacquer Association proposed that the existing rates under item 240 should apply to precipitated barium sulphate in an item worded like heading 28.38 of the B.T.N., until the product is produced in Canada. At that time, rates of 15 p.c., B.P. and 20 p.c., M.F.N. should apply.⁽¹⁾

The Canadian Pulp and Paper Association urged that existing rates for chemicals used by its members should not be increased. The Association listed barium sulphate as such a chemical.⁽²⁾

The Canadian Pharmaceutical Manufacturers Association listed barium sulphate as one of the more important products used by its members and urged rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for chemicals not made in Canada, used in the manufacture of pharmaceuticals. When they are made in Canada the Association proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N.⁽³⁾

Thus there were two sets of proposals before the Board. The first was qualified so that the proposed rates would apply only until the product was made in Canada; the second did not include such a qualification. The proposals are tabulated below, and all proposals are with reference to precipitated barium sulphate, the only form of the product which would be entered under item 240.

<u>Proposed by:</u>	<u>Proposed Rates</u>	
	B.P.	M.F.N.
Mallinckrodt	Free ^(a)	Free ^(a)
Paint Manufacturers	Free ^(a)	10 p.c. ^(a)
Pharmaceutical Mfrs.	Free ^(a)	15 p.c. ^(a)
Laporte Chemicals	Free	10 p.c.
Pulp and Paper Mfrs.	Free	10 p.c.

(a) Until made in Canada; when made, 15 p.c., B.P. and 20 p.c., M.F.N.

Mallinckrodt and Laporte agreed that the Canadian market for the diagnostic grade was too small to warrant the establishment of production facilities, for this grade, in Canada. They also agreed that to increase the existing rates under item 240 would impose additional costs on diagnostic medical services without any compensating benefits.

The spokesman for Mallinckrodt said his company would be the logical producer in Canada when the market was sufficiently large to support a plant. He indicated that this accounted for his qualification that free entry should apply only until the diagnostic grade was made in Canada.

The spokesman for Laporte did not indicate why his proposal was not qualified in the same way, nor why a 10 p.c. duty should apply to imports from M.F.N. countries, while the product was not made in Canada. However, Laporte's parent company in the U.K. would presumably benefit from retention of the existing margin of preference of 10 p.c.

(1) Transcript, Vol. 25, p. 3761; Vol. 93, p. 14157, 14169

(2) Same, Vol. 36, p. 5246; Vol. 85, p. 13015

(3) Same, Vol. 87, p. 13321

The spokesmen for the paint and pharmaceutical industries did not indicate why the rates they proposed were appropriate specifically for barium sulphate either before or after the product was made in Canada. The spokesman for the paint industry conceded that the proposed rate of 10 p.c., M.F.N., while the product was not made in Canada, "doesn't serve in any way the purposes of the paint industry". He also said that the Association had intended to request free entry under both the B.P. and M.F.N. Tariffs, but that the change would have reached the Board after the deadline for submission of briefs.⁽¹⁾

The pulp and paper manufacturers said that chemicals were an important item of cost to the industry, although the cost of individual chemicals might be a very small proportion of the total. Their Association strongly urged that increased costs of chemicals would weaken the competitive position of the industry both in the domestic and in export markets.

No other representations were made to the Board in respect of precipitated barium sulphate.

CALCIUM SULPHATE

Calcium sulphate occurs widely in nature as the hydrous form, gypsum. It also occurs as the anhydrous form. Most of the consumption of the product is as gypsum or other relatively impure forms for plaster, stucco, wallboard filler and many other applications. Canadian production and trade in these less pure forms is very substantial. For example, in 1964, Canada produced and shipped more than 6.4 million tons of crude gypsum valued at \$12.4 million dollars, of which more than five million tons, valued at \$9.1 million dollars were exported.

The relatively pure, chemically-precipitated form of calcium sulphate (satin white) is used almost entirely as an extender for titanium dioxide pigments. At the hearing on titanium dioxide it was said that precipitated calcium sulphate, for use as an extender in paints, was not available commercially but only as incorporated in the extended titanium dioxide pigment. All Canadian supplies of the extended pigment were imported from the U.S.A.⁽²⁾ It was estimated that more than 20,000 tons of calcium sulphate were consumed annually in Canada in the extended pigment.

The mineral forms of calcium sulphate are entered under items 292, 293, and 294 which are outside the terms of Reference 120. In the precipitated form, it may be entered as the analytical reagent grade under item 208t at rates of Free, B.P. and 15 p.c., M.F.N.; as a dry colour, under item 246 at 12½ p.c., B.P. and 17½ p.c., M.F.N., and as satin white under item 240 at Free, B.P., and 10 p.c., M.F.N.

No formal submissions were made dealing specifically with calcium sulphate. However, the Canadian Pulp and Paper Association expressed an interest in the product as a raw material and urged that

(1) Transcript, Vol 25, p. 3769-70

(2) See Section of the Report dealing with titanium dioxide, B.T.N. heading 28.25

there be no increase in the existing rates.(1) Because the precipitated form is not available commercially, it is probable that the Association's proposals were actually directed to some form of gypsum and therefore would involve tariff items that are not within the Board's terms of reference.

The Canadian Federation of Agriculture expressed an interest in calcium sulphate as a constituent of pesticides. The Federation proposed free entry under all Tariffs for chemicals so used.(2)

The Industry Committee urged that chemicals for which no other rate proposals were made should be subject to rates of 15 p.c., B.P. and 20 p.c., M.F.N.; this proposal would apply to precipitated calcium sulphate and would involve an increase from all the existing rates, although no Canadian producer would appear to be in a position to benefit. Moreover, if precipitated calcium sulphate were available commercially, the higher rates would tend to increase the costs to the Canadian paint industry. All Canadian supplies of the extended titanium dioxide pigment and, therefore, of the precipitated calcium sulphate it contains, are imported from the U.S.A. and all Canada's exports of crude gypsum are exported to the U.S.A.

CHROMIUM SULPHATES

The chromium sulphates include several closely related chemicals, some of which are referred to as "rather unstable solutions of basic chromium sulphates" in the Explanatory Notes to the Brussels Nomenclature. Their principal use is in tanning. Chromium sulphates are not produced in Canada and most domestic requirements are imported from the U.S.A. In 1964, the imports of 2,009 tons were valued at \$423,000, more than 90 per cent originating in the U.S.A. Imports in 1964 were down about 20 per cent from those of 1963. Until 1963, they had been increasing steadily for several years.

Imports of Basic Chromic Sulphate, by Principal Country of Origin, Selected Years, 1953-64

	<u>U.K.</u>	<u>Western Germany</u>	<u>U.S.A.</u>	<u>Other</u>	<u>Total</u>	
		- tons -			tons	\$'000
1953	178	135	837	-	1,149	200
1955	300	49	1,142	28	1,519	267
1957	303	53	1,198	22	1,577	302
1959	97	-	1,945	-	2,047	416
1961	63	57	2,149	-	2,269	483
1962	87	60	2,308	-	2,455	553
1963	60	156	2,256	-	2,471	541
1964	129	28	1,853	-	2,009	423

Source: D.B.S., Trade of Canada, Imports, s.c. 8105

(1) Transcript, Vol. 85, p. 13015

(2) Same, Vol. 110, p. 16631

At the public hearing, in October 1962, the Board was informed that the chromium sulphates adapted for tanning were entered under tariff item 203a, "chemical compounds composed of two or more acids or salts soluble in water, adapted for dyeing or tanning", free of duty under both the B.P. and M.F.N. Tariffs. Otherwise, chromium sulphate would be entered under item 208t at rates of Free, B.P., and 15 p.c., M.F.N.

No representations were made to the Board relating specifically to the individual chemicals of the group, but the Tanners Association of Canada submitted a list of products which its members imported under tariff item 203a; the list included basic chromic sulphate. The Association proposed continuation of the provisions of item 203a.(1)

The Shoe Manufacturers Association, in a brief submitted to the Board, recorded its support of the position taken by the Tanners Association.(2)

The Industry Committee in general submissions, urged that chemicals for which no other rates were proposed be dutiable at 15 p.c., B.P. and 20 p.c., M.F.N., in items worded like the appropriate B.T.N. headings. Because the Tanners Association proposal was directed to material adapted for tanning and not specifically to the chemical, the Committee's rate proposal would apply to chromium sulphates of B.T.N. heading 28.38, when not adapted for tanning.

At the hearing in October 1962, the tanners referred to the highly competitive markets, both domestic and export, in which they operated. Their spokesman said that their ability to meet this competition could be impaired if increases in rates resulted in higher costs of their raw materials. The available information indicates that chromium sulphates are among the more important materials used in tanning.

IRON SULPHATES

Ferric Sulphate is a chemical used in pigments, pharmaceuticals, the dyeing of textiles and in other applications. Its only known use in Canada is in the manufacture of pharmaceuticals, but the available information indicates that this application accounts for only part of the imports. It is not known to be made in Canada and imports in 1960, the latest year for which information is available, are estimated to have been valued at about \$4,300.

Ferric sulphate is entered as an unenumerated product under tariff item 208t, at rates of Free, B.P. and 15 p.c., M.F.N. The Canadian Pharmaceutical Manufacturers Association listed the chemical as being of relatively minor economic importance to its members and requested rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for chemicals used in the manufacture of pharmaceuticals, until they are made in Canada.(3)

(1) Transcript, Vol. 95, p. 14418

(2) Same, Vol. 95, p. 14456

(3) Same, Vol. 87, p. 13321

No other representations made to the Board related specifically to ferric sulphate.

Ferrous Sulphate (iron sulphate, iron vitriol, green copperas, green vitriol) is a by-product of the pickling of steel and of many chemical processes. It is also produced by the action of sulphuric acid on iron.

Ferrous sulphate, other than a grade designated as "exsiccated U.S.P.", is not known to be made in Canada; imports in recent years have been largely from the U.S.A. and Japan. In 1963, about 1,900 tons valued at nearly \$45,000 were imported, more than double the quantity and almost double the value of imports in 1954, ten years previously.

Imports of Sulphate of Iron (Copperas), by Principal
Country of Origin, Selected Years, 1953-63

	<u>U.K.</u>	<u>Japan</u>	<u>U.S.A.</u>	<u>Other</u>	<u>Total</u>	
		- tons -			tons	\$'000
1953	32	-	784	55	871	30
1955	118	-	772	-	890	29
1957	119	-	840	-	959	30
1959	416	-	1,083	165	1,664	47
1961	57	511	921	6	1,494	38
1962	22	834	836	-	1,692	39
1963	-	754	1,106	-	1,860	45

Source: D.B.S., Trade of Canada, Imports, s.c. 8253

Ferrous sulphate is known to be used in Canada in the manufacture of fertilizers, pesticides, pharmaceuticals and synthetic rubber. It has additional applications in other processes, but no information is available regarding these.

Ferrous sulphate is entered under item 208n, "sulphate of iron (copperas)", at Free, B.P. and 10 p.c., M.F.N. but the exsiccated U.S.P. grade is entered under item 711 at rates of 15 p.c., B.P., 20 p.c., M.F.N. Ferrous sulphate could also qualify for duty-free entry under end-use items 663b, 791 and 851.

All of the representations relating to ferrous sulphate were based on end-use interests. Polymer Corporation Limited, the Canadian Federation of Agriculture and seven manufacturers of pesticides urged free entry under both the B.P. and M.F.N. Tariffs for ferrous sulphate when for use in the manufacture of synthetic rubber, fertilizers, or pesticides. The pesticides manufacturers qualified their proposal to apply only until the product was made in Canada, at which time they recommended rates of 15 p.c., B.P. and 20 p.c., M.F.N.(1)

(1) Transcript, Vol. 89, p. 13587; Vol. 83, p. 12813-4; Vol. 110 p. 16631-2; Vol. 108, p. 16332-3

The Canadian Pharmaceutical Manufacturers Association listed ferrous sulphate as one of the more economically important chemicals used by its members; it recommended rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, to apply until they were made in Canada, for chemicals used in the manufacture of pharmaceuticals. For products made in Canada, the Association recommended rates of 15 p.c., B.P. and 20 p.c., M.F.N.⁽¹⁾

The others, who recommended free entry for specified end-use purposes, generally supported their proposals by saying that higher rates of duty would increase their costs and would affect their competitive position for the products in which the chemical is used.

LITHIUM SULPHATE

Lithium sulphate is a colourless, crystalline substance whose principal and perhaps only use is in the manufacture of pharmaceuticals. It is not produced in Canada and is entered under tariff item 208t, Free, B.P. and 15 p.c., M.F.N.

At the hearing in February 1961, Pfizer Canada referred to its previous submission on lithium hydroxide⁽²⁾, and proposed the continuation of the existing rates for lithium sulphate.⁽³⁾ At the earlier hearing on lithium hydroxide, Pfizer had said that lithium salts are strategic materials and that a subsidiary company in England was the only producer of these in the Commonwealth; however, two other companies are known to produce lithium products in England. Pfizer's argument in support of its proposed rates appeared to be that the rates would assure continuation of production of these salts by a Commonwealth producer.

The Canadian Pharmaceutical Manufacturers Association listed lithium sulphate as a relatively unimportant chemical used by its members and proposed rates of Free, B.P., and 15 p.c., M.F.N., unless otherwise provided for, for chemicals used in the manufacture of pharmaceuticals, until they are made in Canada.⁽⁴⁾ The Association did not indicate why these rates were appropriate specifically for lithium sulphate.

MAGNESIUM SULPHATE

Magnesium sulphate (epsom salts) is a colourless, crystalline chemical. In its usual commercial form it is hydrated and has the chemical formula $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$. It is also available as a dry powder with some of the water of hydration removed by heating. Its principal uses are in tanning sole leather, in the production of textiles, ceramics, explosives, paper and fertilizers and as a pharmaceutical.

(1) Transcript, Vol. 87, p. 13321

(2) Same, Vol. 19, p. 2786

(3) Same, Vol. 26, p. 3835

(4) Same, Vol. 87, p. 13321

The dried pure powder is ruled to be made in Canada. Other grades of magnesium sulphate are not produced in Canada and imports from West Germany and, to a lesser extent, from the U.S.A. constitute most of the Canadian supplies. West Germany is the major supplier and in 1963 shipped 80 per cent of the 3,361 tons imported in that year. Total imports in 1963 were valued at \$88,348. Imports from West Germany have been increasing; those from other countries have been decreasing.

Imports of Magnesium Sulphate, by
Country of Origin, Selected Years, 1953-63

<u>Year</u>	<u>U.K.</u>	<u>Nether- lands</u> - tons -	<u>West Germany</u>	<u>U.S.A.</u>	<u>Total</u> tons \$'000	
1953	70	33	1,660	999	2,761	80.9
1955	37	93	1,379	868	2,376	69.0
1957	35	5	1,524	994	2,558	71.3
1959	37	25	1,797	862	2,721	70.7
1961	75	-	1,849	667	2,591	69.5
1962	28	-	2,065	712	2,806	81.4
1963	23	-	2,716	622	3,361	88.3

Source: D.B.S., Trade of Canada, Imports, s.c. 8376

The available statistics on consumption account for less than half of the known imports into Canada. However, they indicate a substantial use by the pharmaceutical and leather tanning industries.

Known Consumption of Magnesium Sulphate, by Industry,
1957-63

<u>Year</u>	<u>Fertilizers</u>	<u>Medicinal and Pharmaceutical</u> - tons -	<u>Leather Tanning</u>	<u>Unac- counted</u> (b)	<u>Total</u> (a)
1957	49	634	474	1,401	2,558
1958	100	658	464	1,231	2,453
1959	104	539	388	1,690	2,721
1960	130	501	355	1,448	2,434
1961	162	572	431	1,426	2,591
1962	140	571	412	1,783	2,806
1963	..	..	..	..	3,361

(a) Imports

(b) By subtraction

Source: D.B.S., Annual Publications, Cat. Nos. 33-202, 46-206, 46-209, 65-007

Tariff Considerations

Magnesium sulphate generally is entered under item 208t, Free, B.P. and at 15 p.c., M.F.N.; the grade described as dried pure powder is entered under tariff item 711 at rates of 15 p.c., B.P. and 20 p.c., M.F.N. The trade statistics suggest that some may also be entered under end-use items.

At the public hearing in February 1961, the Tanners Association of Canada urged that the product be entered free of duty under both the B.P. and M.F.N. Tariffs, until it is made in Canada.⁽¹⁾ The Association did not indicate what rates might be appropriate at that time.

In a letter to the Board, dated May 26, 1959, Van Waters and Rogers of Canada Limited urged free entry under the B.P. and M.F.N. Tariffs, for magnesium sulphate used to correct mineral deficiencies in soils.

The Canadian Federation of Agriculture listed magnesium sulphate as a chemical constituent of fertilizers and requested continuation of free entry under the B.P. Tariff and 5 p.c. under the M.F.N. Tariff, for chemicals used as fertilizers, and free entry under both Tariffs for chemicals used in the manufacture of fertilizers.⁽²⁾

The Canadian Pharmaceutical Manufacturers Association listed the chemical as one of relatively small economic importance to its members and urged rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for chemicals used in the manufacture of pharmaceuticals, while they are not made in Canada.⁽³⁾ Although it was shown only in a list of minor chemicals, the available data indicate that the pharmaceutical industry uses 500 to 600 tons of the product annually, with a value at the point of use of about \$40,000 to \$50,000.

Naugatuck Chemicals Division of Dominion Rubber Company Limited expressed an interest in magnesium sulphate as a raw material used by the company. The company spokesman said he took no issue with the rates proposed by Canadian producers but he did not indicate what the company's position was with respect to chemicals that were not made in Canada.⁽⁴⁾

No other representations were made to the Board specifically with respect to magnesium sulphate.

The proposals before the Board were of two kinds. The tanners requested free entry under the B.P. and M.F.N. Tariffs, regardless of the intended use; the pharmaceutical manufacturers, Van Waters and Rogers and the Federation of Agriculture proposed end-use provisions. The rates proposed by the tanners and pharmaceutical manufacturers were qualified to apply only while the chemical was not produced in Canada; the tanners did not indicate what rates should apply when it is produced in Canada. The various parties proposed either free entry under both the B.P. and M.F.N. Tariffs, or the rates now in force under item 208t: Free, B.P. and 15 p.c., M.F.N.

(1) Transcript, Vol. 26, p. 3836

(2) Same, Vol. 83, p. 12813

(3) Same, Vol. 87, p. 13321

(4) Same, Vol. 6, p. 899-900

The case for either low rates or free entry was based on the argument that lower rates of duty would assist in achieving lower costs of production for the products into whose use magnesium sulphate entered. The tanners said their industry was highly competitive both domestically and in export markets. The spokesman for their Association stated:

"Every factor that tends to hold costs down increases the ability of the industry to hold its position in the domestic market and to increase its exports -- which now account for approximately 20% of Canadian production of leather."(1)

MANGANOUS SULPHATE (MANGANESE SULPHATE)

Manganous sulphate (manganese sulphate) is one of a group of chemicals used in Canada in the production of driers for paint, varnish, printing inks and floor coverings and in the manufacture of fertilizers and pesticides. It is also used in the production of other manganese compounds, in textile dyeing and in other applications. No information is available regarding the distribution of its use in Canada.

Manganous sulphate is not produced in Canada. In 1960, the latest year for which data are available, the value of imports is estimated at approximately \$55,000.

In the U.S.A., the chemical is sold in a fertilizer grade and as a purified monohydrate grade. In October 1965, the price, f.o.b. works, of the fertilizer grade, containing 75 per cent of manganese sulphate, in bags, was \$95 a ton. The purified product is sold in 275 pound drums and is very much more expensive. In October 1965, this grade was 59 cents a pound, the equivalent of almost \$1200 a ton.

Manganous sulphate is entered under item 208t, Free, B.P. and at 15 p.c., M.F.N. It may also be entered under various end-use items, for example, item 663b, if for use in the manufacture of fertilizers under item 79l, if for use in the manufacture of pesticides, or item 219h, when for use in the manufacture of animal feeds. Item 219h is not in Reference 120.

At the public hearing in February 1961, Nuodex Products of Canada Limited proposed that until the chemical is manufactured in Canada, it should be entered free of duty under both the B.P. and M.F.N. Tariffs, in an item worded like heading 28.38 of the B.T.N.(2)

The Canadian Federation of Agriculture listed manganese sulphate as a constituent of fertilizers and manganous sulphate as a constituent of pesticides. The Federation urged free entry for all materials used in the manufacture of fertilizers and pesticides under both the B.P. and M.F.N. Tariffs.(3)

(1) Transcript, Vol. 26, p. 3837

(2) Same, Vol. 26, p. 3838

(3) Same, Vol. 83, p. 12813-4; Vol. 110, p. 16631-2

The Canadian Pharmaceutical Manufacturers Association listed manganese sulphate as a chemical of relatively minor economic importance used by its members and proposed rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for chemicals used in the manufacture of pharmaceuticals, until they are made in Canada.(1)

In a letter to the Board, dated May 26, 1959, Van Waters and Rogers of Canada Limited urged free entry for manganese sulphate, when used to correct mineral deficiencies of soils.

No other representations were made to the Board specifically regarding manganous sulphate or manganese sulphate.

Thus the proposals before the Board were either for free entry under both the B.P. and M.F.N. Tariffs, regardless of use (Nuodex); for free entry under both Tariffs in end-use items (Federation of Agriculture and Van Waters and Rogers); or for continuation of the existing rates under item 208t of Free, B.P. and 15 p.c., M.F.N. in an end-use item (pharmaceutical manufacturers).

The pharmaceutical manufacturers and Van Waters and Rogers did not indicate why the rates they proposed were appropriate specifically for manganese sulphate.

The Federation of Agriculture supported its proposals by arguing that increased tariffs would affect its members' costs and their competitive position in the domestic and world markets. The Federation took the position that materials used in agricultural production should generally be entered free of duty as a part of a desirable national policy.

The Nuodex brief said that a suitable product was not available from Canadian production and urged free entry until such time as it was produced in Canada.

POTASSIUM PERSULPHATE

Potassium persulphate is an oxidizing and reducing agent used in the manufacture of synthetic resins, synthetic rubber, soaps, bleaches and as an analytical reagent. It is not made in Canada and the little information available indicates imports in 1960 valued at about \$40,000.

It is entered under tariff item 208t at rates of Free, B.P. and 15 p.c., M.F.N. It is also entered under end-use item 851 for the manufacture of synthetic rubber and end-use item 921 for the manufacture of synthetic resins, free of duty under both the B.P. and M.F.N. Tariffs.

At the hearing in February 1961, the spokesman for the Industry Committee informed the Board that Dow Chemical of Canada Limited had written to the Committee proposing rates of 15 p.c., B.P. and 20 p.c., M.F.N., "providing we [Dow] receive favourable consideration on synthetic resins when they come up for review." (2) Presumably this proposal was intended to exclude potassium persulphate from the provisions of end-use item 921, under which Dow imported the chemical

(1) Transcript, Vol. 87, p. 13321

(2) Same, Vol. 26, p. 3929

for use in the manufacture of synthetic resins. Neither the Dow letter nor the Industry Committee spokesman gave any indication why the proposed rates would be appropriate specifically for the product, nor why the existing rates for it, either under item 208t or 921, should be increased.

Polymer Corporation Limited expressed an interest in potassium persulphate as a raw material used in the production of synthetic rubber. Polymer urged continuation of the end-use provisions of item 851, for materials used in the manufacture of synthetic rubber, with free entry under all Tariffs.⁽¹⁾

POTASSIUM HYDROGEN PERMONOSULPHATE

The Canadian Pharmaceutical Manufacturers Association expressed an interest in potassium hydrogen permonosulphate as a chemical of relatively small economic importance to its members. The Association proposed rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for chemicals used in the manufacture of pharmaceuticals, while they are not made in Canada.⁽²⁾ The chemical is now entered under tariff item 208t, at the proposed rates of duty.

SODIUM SULPHATE, ACID

Sodium sulphate, acid (sodium hydrogen sulphate, sodium bisulphate, niter cake, nitre cake) is usually derived as a by-product in the production of hydrochloric and nitric acids. It is used as a flux for decomposing minerals, in dyeing, disinfecting, the production of sodium sulphate, paper and in other applications.

It is not known to be made in Canada and all supplies are imported. In 1964, almost 3,500 tons valued at \$163,000 were imported, more than double the quantity and value of imports ten years previously. Since 1960 all imports have been from the U.S.A.; in earlier years only the U.K. supplied other, occasional, small amounts.

Imports of Bisulphate of Soda, by Country of Origin, Selected Years, 1953-64

	<u>U.K.</u>		<u>U.S.A.</u>		<u>Total</u>	
	tons	\$'000	tons	\$'000	tons	\$'000
1953	20	2	1,156	59	1,176	61
1955	10	*	1,236	58	1,246	58
1957	10	1	1,818	83	1,828	84
1959	6	*	2,273	92	2,279	92
1961	-	-	2,349	100	2,349	100
1962	-	-	2,778	128	2,778	128
1963	-	-	2,922	142	2,922	142
1964	-	-	3,472	163	3,472	163

Source: D.B.S., Trade of Canada, Imports, s.c. 8348

(1) Transcript, Vol. 89, p. 13587

(2) Same, Vol. 87, p. 13321

Sodium hydrogen sulphate is entered under item 208b, "bisulphate of soda or nitre cake", Free, B.P. and at 20 p.c., M.F.N.

Although the product appears to have economic importance, the only representation made to the Board relating specifically to it was by the Canadian Pharmaceutical Manufacturers Association. The Association indicated that to its members the product was of relatively minor economic importance. It requested that chemicals, for use in the production of pharmaceuticals, should be entered at rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, until they were ruled to be made in Canada.⁽¹⁾

In its general submissions the Industry Committee proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., for products for which no other proposals were made. This proposal would also relate to sodium hydrogen sulphate when imported for other than pharmaceutical use.

The use of the product by the pharmaceutical industry would account for only a small part of the imports. The users of most of the product are not known.

TITANIUM SULPHATE

Titanium sulphate (titanium sulphate, basic) is used in Canada in the manufacture of inorganic pigments. It is not produced in Canada and all supplies were said to be imported from the U.S.A. A survey made by the Canadian Color Makers Association indicated that this industry used 62,275 pounds, valued at \$9,603 in 1958 and 72,951 pounds, valued at \$11,378, in 1959. Imports in 1960 appear to have had a value of about \$8,200.

The spokesman for the Color Makers Association said that to his knowledge the only use of the chemical was in pigments and that there were no known substitutes for it.

Titanium sulphate is entered under tariff item 208t, Free B.P. and at 15 p.c., M.F.N. The Color Makers Association proposed free entry under both the B.P. and M.F.N. Tariffs "for materials of a kind not made in Canada for use in the manufacture of synthetic pigments...." When the products are made in Canada, it recommended rates of 15 p.c., B.P. and 20 p.c., M.F.N.⁽²⁾

The spokesman for the Industry Committee said he preferred that the chemical be entered free of duty without any end-use restriction, if duty-free entry were to be recommended by the Board.⁽³⁾

No other representations were made to the Board with respect specifically to titanium sulphate.

(1) Transcript, Vol. 87, p. 13321

(2) Same, Vol. 26, p. 3923-25; Vol. 93, p. 14205

(3) Same, Vol. 26, p. 3927

ZINC SULPHATE

Zinc sulphate (white vitriol, white copperas, zinc vitriol) is produced by the action of sulphuric acid on metallic zinc, zinc oxide, zinc carbonate or roasted blende. It is used for such purposes as refining ores, dyeing textiles, zinc-plating, preserving wood, in the manufacture of pesticides, fertilizers, pigments and pharmaceuticals.

Zinc sulphate has been produced in Canada by the Consolidated Mining and Smelting Company (Cominco) and perhaps by others, but there is no information available regarding Canadian production and it is not known whether Canadian producers offer the chemical for sale. In recent years imports have varied between 900 and 1,700 tons annually, valued at between \$75,000 and \$178,000. The U.K. is the principal source of imported supplies and ordinarily accounts for one half to two thirds of the total imports. The U.S.A., Belgium and Luxembourg, and Western Germany supply almost all of the remainder.

Imports of Sulphate of Zinc, by Country of Origin,
Selected Years, 1953-64

	<u>U.K.</u>	<u>Belg. & Lux.</u>	<u>Western Germany</u>	<u>U.S.A.</u>	<u>Total</u>	
		- tons -			tons	\$*000
1953	726	-	-	539	1,265	143
1955	643	273	43	455	1,415	144
1957	1,068	85	171	207	1,532	139
1959	603	248	32	97	1,021(a)	85(a)
1961	616	185	26	77	904	78
1962	804	101	446	151	1,501	148
1963	1,119	142	27	394	1,682	178
1964	1,116	105	67	228	1,515	178

(a) Includes 41 tons from France, valued at \$2,080

Source: D.B.S., Trade of Canada, Imports, s.c. 8279

The available information suggests that a large part of Canadian consumption of zinc sulphate is in the refining of minerals. In 1960, about 401 tons were used for refining minerals and 129 tons for adhesives.

Tariff Considerations

Zinc sulphate is entered under item 208s, "Sulphate of zinc and chloride of zinc", Free, B.P. and at 20 p.c., M.F.N.; it is entered free of duty under item 791 if for use in the manufacture of pesticides and under item 663b if for use in the manufacture of fertilizers; if for direct application as a fertilizer, it may be entered at rates of Free, B.P., 5 p.c., M.F.N. under tariff item 663.

The Consolidated Mining and Smelting Company of Canada Ltd. expressed interest as a producer of the chemical. In a general submission the company urged that rates of duty should not be increased if they are likely to result in retaliatory increases by other countries or if they are likely to result in higher costs to Canadian manufacturers.⁽¹⁾

Naugatuck Chemicals expressed an interest in zinc sulphate and informed the Board that it took no issue with the rates proposed by producers providing the Board recommended those rates which the company would propose for the products which it manufactured.⁽²⁾

Van Waters and Rogers of Canada Limited, the Canadian Federation of Agriculture and seven Canadian manufacturers of pesticides urged free entry for zinc sulphate, under both the B.P. and M.F.N. Tariffs, when imported for use as a soil conditioner or in the manufacture of fertilizers or pesticides.⁽³⁾ The pesticides manufacturers qualified their proposal to apply only until the product is ruled made in Canada; at that time they proposed that rates of 15 p.c., B.P. and 20 p.c., M.F.N., apply.

The Canadian Pharmaceutical Manufacturers Association listed zinc sulphate as a chemical of minor economic importance used by its members and recommended rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, until made in Canada, for chemicals used in the manufacture of pharmaceuticals, and rates of 15 p.c., B.P. and 20 p.c., M.F.N., when these are ruled to be made in Canada.⁽⁴⁾

In general the consumers were concerned with the effect of tariffs on their costs of materials. They said that increased costs would make them less able to compete in both the domestic and export markets.

Although Cominco indicated that its interest in zinc sulphate was as a producer, the manufacturers of pesticides listed zinc sulphate as a chemical which was not commercially available in Canada. This suggests that Cominco and others who may produce the chemical use their output captively.

Cominco did not make a separate submission for zinc sulphate. However, throughout the hearings, the company expressed its concern that if tariffs were increased costs of Canadian manufacturers would rise and affect their ability to compete.

OTHER PRODUCTS OF HEADING 28.38

Three other chemicals of B.T.N. heading 28.38 were the subject of expressions of interest, chromium potassium sulphate, thallium sulphate and zinc oxysulphate.

(1) Transcript, Vol. 5, p. 715

(2) Same, Vol. 6, p. 899-900

(3) Same, Vol. 83, p. 12813-4; Vol. 110, p. 16631-2; Vol. 108, p. 16332-3; letter to Board, dated May 26, 1959

(4) Same, Vol. 87, p. 13321-2

British Chrome and Chemicals Canada Limited proposed rates of Free, B.P. and 10 p.c., M.F.N., until made in Canada, for chromium potassium sulphate and did not object to rates of 15 p.c., B.P. and 20 p.c., M.F.N., when it is made in Canada.⁽¹⁾ The chemical is now entered under item 203a as a chemical compound composed of two or more salts soluble in water, adapted for dyeing or tanning, free of duty under both the B.P. and M.F.N. Tariffs.

A group of seven pesticides producers listed thallium sulphate as a biologically active raw material used by them in the production of pesticides. For use in pesticides the chemical is entered under end-use item 791, free of duty under all Tariffs. The group urged that until made in Canada, the chemical continue to be entered free of duty if for use in the manufacture of pesticides.⁽²⁾ If not for use in pesticides, imports are now entered under item 208t at Free, B.P., and 15 p.c., M.F.N.

The Canadian Federation of Agriculture listed zinc oxysulphate as a chemical used in the production of fertilizers and urged that the provisions of end-use item 663b, under which such materials are entered free of duty under all Tariffs, should be continued.⁽³⁾ Except for end-use items, the product is entered under item 208t, at Free, B.P. and 15 p.c., M.F.N.

No other representations were made to the Board relating to specific chemicals of B.T.N. heading 28.38. The Industry Committee proposed that all products for which no other proposals were made to the Board should be subject to rates of 15 p.c., B.P. and 20 p.c., M.F.N. This proposal would apply to an unknown number of chemicals and it would also apply to those imports of a product which would be excluded from a proposal which specified a particular end-use.

In many of the instances where no submissions were received for a chemical, the available information generally indicated that it was of relatively small or negligible economic importance. However, in some cases, for example sodium hydrogen sulphate and basic chromic sulphate, the commercial interest is known to be significant.

The spokesman for the Industry Committee referred to copper sulphate, nickel sulphate and nickel ammonium sulphate as chemicals which he believed to be manufactured in Canada in significant amounts and for which no formal submission had been made to the Board. Since the hearing, nickel ammonium sulphate has been reclassified under heading 28.48, as the result of an amendment to the B.T.N.

Copper sulphate (blue vitriol) is provided for, by name, in item 208m, at rates of Free, B.P. and 10 p.c., M.F.N. Copper sulphate tribasic, cupric sulphate dehydrated and cuprous sulphate are entered under tariff item 208t, at rates of Free, B.P. and 15 p.c., M.F.N. Nickel sulphate, technical or commercial grade, is ruled to be made in Canada and is entered under item 711 at rates of 15 p.c., B.P. and 20 p.c., M.F.N.; other grades are entered under item 208t, Free, B.P. and 15 p.c., M.F.N.

(1) Transcript, Vol. 32, p. 4697

(2) Same, Vol. 108, p. 16332

(3) Same, Vol. 83, p. 12813

Potassium sulphate and potassium magnesium sulphate were listed in some submissions as being classified in heading 28.38 of the B.T.N. However, these two products are classified in the fertilizers section under heading 31.04 and are dealt with there.

NITRITES AND NITRATES - B.T.N. HEADING 28.39INTRODUCTION

Heading 28.39 of the Brussels Tariff Nomenclature includes a group of chemicals, only one of which, sodium nitrate, is of substantial economic importance and only two of which are known to be made in Canada, basic bismuth nitrate and cobalt nitrate, other than analytical reagent grade. The available information indicates that these are of relatively minor significance. One important nitrate, ammonium nitrate, is not classified under this heading. It is discussed with the nitrogenous fertilizers under B.T.N. heading 31.04. It alone has an annual sales value exceeding \$20 million.

The heading generally applies to chemicals whose principal use is in the manufacture of explosives. Imports, which account for practically the total known consumption in Canada, were valued at slightly more than one million dollars in 1964.

The products which are discussed here are listed below, together with the value of their imports, where available. The table excludes calcium nitrate and ferric nitrate for which some representations were made but for which no data are available. It also excludes the nitrates classified by other headings of the B.T.N., for example ammonium nitrate (heading 31.02) and ammonium sulphate nitrate (31.05).

	Value of Imports		
	<u>1962</u>	<u>1963</u>	<u>1964</u>
		\$'000	
Barium nitrate	12	12 ^(a)	12 ^(a)
Basic bismuth nitrate	..	..	..
Potassium nitrate	139	135	133
Sodium nitrate	921	893	1,080
Sodium nitrite	97	88	..
Strontium nitrate	50 ^(a)	50 ^(a)	50 ^(a)
Total	<u>1,219</u>	<u>1,178</u>	<u>1,275</u>

(a) Estimated

BARIUM NITRATE

Barium nitrate is a white crystalline powder used to impart a green colour to flares, fusees and fireworks. It is also used in the manufacture of priming for explosives. It is not made in Canada.

At the public hearing, in February 1961, Canadian Industries Limited informed the Board that it imported 90 per cent or more of the barium nitrate imported into Canada, for its own use and for resale. The company spokesman said half or more of the total was imported from the U.K. and the remainder from the U.S.A. The product obtained from the U.S.A. was said not to be obtainable in the U.K.

Canadian use in 1961 and 1962 appears to have been 100,000 pounds annually, with a value of approximately \$12,000. C.I.L. said it sells part of its imports to two other users in Canada, one of whom manufactures fireworks. The use by C.I.L. for flares, fusees and priming was said to be the major application in Canada.

Barium nitrate is entered under tariff item 208t, at Free, B.P. and 15 p.c., M.F.N., and under item 664a, free of duty under both the B.P. and M.F.N. Tariffs. Item 664a applies to "nitrate compounds not elsewhere specified adapted for use in the manufacture of explosives." Because the major use is in explosives, most of the imports would be entered free of duty under item 664a. This was suggested by the spokesman for C.I.L., who said that all of the company's purchases from the U.S.A. were entered under item 664a. The product is entered free of duty under the B.P. Tariff, both under item 664a and 208t.

Imperial Chemicals Limited (I.C.I.) proposed retention of the existing British Preference and rates of duty of Free, B.P. and 15 p.c., M.F.N.⁽¹⁾ The company made no recommendation to the Board regarding imports under item 664a. No other representations were made to the Board, specifically concerning barium nitrate.

I.C.I. supported its proposal in general terms. The company's brief stated that imports of Canadian chemicals by the U.K. were about equal in value to Canadian imports of chemicals from the U.K.; that Canadian chemicals are imported into the U.K. under British Preferential rates and therefore that similar treatment should be preserved by Canada for imports from Commonwealth countries.

As indicated above, the company made no reference to imports under item 664a, providing free entry under both the B.P. and M.F.N. Tariffs for most of the imports which are entered.

In the Brussels Nomenclature, barium nitrate is classified under heading 28.39.

The product that is imported under the M.F.N. Tariff, from the U.S.A. is apparently not produced by I.C.I. and apparently most imports from both the U.K. and the U.S.A. are under item 664a, free of duty under both the B.P. and M.F.N. Tariffs. If the rates proposed by I.C.I. were implemented, and barium nitrate were excluded from item 664a, it would result in an increase in the effective M.F.N. rate, from zero to 15 p.c. and the establishment of a preferential rate which in fact does not now exist for the bulk of the imports.

BASIC BISMUTH NITRATE

Basic bismuth nitrate (bismuth subnitrate) is one of a group of bismuth salts produced in Canada only by Mallinckrodt Chemical Works, at Montreal, Quebec. The company also produces basic bismuth carbonate (bismuth subcarbonate), basic bismuth gallate (bismuth subgallate), and basic bismuth salicylate (bismuth subsalicylate). Bismuth constitutes 71.5 per cent of the weight of basic bismuth nitrate and was said to be

⁽¹⁾ Transcript, Vol. 27, p. 3969

the largest single element of cost in the production of bismuth salts. The principal uses of basic bismuth nitrate, in Canada, were said to be in the production of other bismuth salts and pharmaceutical products.

There are no published data regarding individual bismuth salts. However, the spokesman for Mallinckrodt said he believed the company supplied the bulk of the Canadian market. The import data combine all bismuth salts in one statistical class. In 1963 Canadian imports of all bismuth salts, including some which are not produced in Canada, declined to a value of \$19,164 after reaching a peak of \$40,000 in 1961. If Mallinckrodt supplies the bulk of the Canadian market for the bismuth salts which it produces, imports of these salts would be only a small part of these importations.

The U.K. is the principal external supplier to the Canadian market and accounts for 75 to 95 per cent of total imports. The U.S.A. supplies the remainder.

Imports of all Bismuth Salts, by Country of Origin,
1958-63

	<u>U.K.</u>	<u>U.S.A.</u>	<u>Total</u>
		dollars	
1958	17,824	2,717	20,541
1959	23,930	2,338	26,268
1960	19,119	6,897	26,016
1961	32,644	7,217	39,861
1962	27,988	1,378	29,366
1963	16,374	2,790	19,164

Source: D.B.S., Trade of Canada, Imports, s.c. 8291

At the public hearing, in February 1961, the spokesman for Mallinckrodt said a major problem was that bismuth could be purchased more cheaply in the U.K. than in Canada. Before 1961, the price of bismuth of high purity was said to have been \$1.90 a pound in the U.K. and \$2.25 in Canada. At the time of the hearing, the published price in the U.K. was equivalent to \$2.22 a pound, only 1.4 per cent less than the price of \$2.25 a pound, delivered in Montreal. By the end of 1962, changing exchange rates made the price of bismuth in Britain equivalent to \$2.41 a pound; the delivered price of bismuth in Canada remained unchanged at \$2.25 a pound, a difference of about seven per cent in favour of Canadian consumers of bismuth.

Tariff Considerations

Basic bismuth nitrate is entered as an unenumerated product, under tariff item 711, at 15 p.c., B.P. and 20 p.c., M.F.N.

At the hearing in February 1961, Mallinckrodt Chemical Works proposed continuation of these rates.⁽¹⁾ The company spokesman sup-

(1) Transcript, Vol. 27, p. 3983

ported the proposal mainly on the grounds of higher costs of bismuth relative to its competitors in Britain. He also said that overseas competitors had lower unit costs because of their larger output.

Mallinckrodt claimed to be at a disadvantage, relative to British producers, in its purchases of bismuth, before 1961. However, by late 1962, because of changes in rates of exchange, the relative prices of bismuth in Britain and Canada had changed this disadvantage to an advantage of about seven per cent, or five per cent when expressed on the basis of the bismuth content of the nitrate.

The spokesman for Mallinckrodt said although higher rates of duty would reserve the whole Canadian market for the company, that the Canadian market "is not large enough to give the requisite level for fully efficient production." He continued, saying,

"We need, not higher duties, but a higher production efficiency coupled with ... cheaper sources of domestic bismuth. This combination would provide the basis for selling in the larger export market, and allow more manufacturing to be done within Canada rather than abroad." (1)

Neither the rates proposed, nor higher rates would improve the situation with respect either to lower costs of bismuth or to export sales. From the statements of the company spokesman it appeared that export sales were dependent on a cheaper source of bismuth. In recent years the company has been able to purchase bismuth more cheaply than its British competitors and there has been a reduction in the value of imports of bismuth salts. However, there is no information available regarding the development of export markets.

The Canadian Pharmaceutical Manufacturers Association listed basic bismuth nitrate as one of the more important chemicals used by its members and recommended rates of 15 p.c., B.P. and 20 p.c., M.F.N., for chemicals which are made in Canada and are used in the manufacture of pharmaceuticals. (2)

The Association also listed bismuth nitrate as, economically, a relatively unimportant chemical used by its members. The Association proposed rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for chemicals not made in Canada, and rates of 15 p.c., B.P., 20 p.c., M.F.N. for those which are made in Canada. (3)

Bismuth nitrate would be entered under item 208t, Free, B.P. and at 15 p.c., M.F.N. The Board has no information on the use of the product but it seems reasonable to suppose that it would have less commercial importance than bismuth subnitrate. Both products are classified under heading 28.39.

(1) Transcript, Vol. 27, p. 3985

(2) Same, Vol. 87, p. 13305

(3) Same, Vol. 87, p. 13321

POTASSIUM NITRATE

Potassium nitrate, saltpetre, is a crystalline chemical, used principally in the manufacture of explosives. It is also used to manufacture fertilizers, other chemicals and porcelain enamel frits. Potassium nitrate is not produced in Canada.

The Canadian market for the chemical has grown rapidly in the past decade and in the past few years (1962-64) imports have averaged about 900 tons annually, with a value of about \$135,000, approximately double the annual value of imports ten years previously.

Imports of Potassium Nitrate, by Principal Country of Origin,
Selected Years, 1953-64

	<u>U.K.</u>	<u>U.S.A.</u>	West <u>Germany</u>	<u>Other</u>	<u>Total</u>	
		-	tons -		tons	\$'000
1953	47	131	398	28	604	72
1955	120	108	389	3	620	81
1957	15	34	430	44	523	57
1959	44	30	667	-	741	104
1961	2	72	798	44	916	146
1962	1	*	646	266 ^(a)	912	139
1963	3	60	599	188 ^(a)	851	135
1964	2	155	622	105 ^(a)	884	133

(a) Mainly from Poland

Source: D.B.S., Trade of Canada, Imports, s.c. 8331

West Germany has been the principal supplier of the Canadian market, the U.S.A. and the U.K. being the only other countries which shipped to Canada regularly. Imports from the U.K. have become very small in recent years. Imports from Poland were 237 tons in 1962 and 188 tons in 1963, second only to those from Western Germany.

The available statistics on consumption account for less than half the imports. However, they indicate that substantial quantities are used in the manufacture of explosives. Fairly substantial amounts are also known to be used in the manufacture of fertilizers and porcelain enamel frits.

Tariff Considerations

Potassium nitrate is entered under item 209, as "saltpetre or nitrate of potash", free of duty under all Tariffs.

Ferro Enamels (Canada) Limited, in a letter to the Board, dated June 27, 1963, urged that free entry under both the B.P. and M.F.N. Tariffs be continued. The company said that it used the chemical in the manufacture of porcelain enamel frits and that higher rates of duty would have a serious effect on its costs.

The Canadian Federation of Agriculture expressed its interest in potassium nitrate as a constituent of fertilizers and requested that the provisions of items 663 and 663b be continued, with free entry under all Tariffs, for chemicals used in the manufacture of fertilizers (item 663b) and rates of Free, B.P. and 5 p.c., M.F.N., for chemicals used as fertilizers (item 663);⁽¹⁾ the Federation would have no objection to removal of the 5 per cent M.F.N. rate under tariff item 663. As noted above, a more general duty-free provision at present exists in item 209.

The Canadian Pharmaceutical Manufacturers Association also expressed an interest in potassium nitrate, as a chemical of minor economic importance to its members. The Association recommended that chemicals which were not produced in Canada and were used in the manufacture of pharmaceuticals should be entered at rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, until they were ruled as made in Canada.⁽²⁾

No other representations were made to the Board related specifically to potassium nitrate.

SODIUM NITRATE

Sodium nitrate, in its natural form, is known by such names as caliche, chile nitrate, chile saltpetre and cubic niter. It occurs naturally, mainly in Chile. It is also produced synthetically. Typically, the natural product contains 17.6 per cent sodium nitrate or about three per cent nitrogen. However, in its usual commercial form, caliche is concentrated to at least 99 per cent sodium nitrate and contains 16.3 per cent or more of nitrogen. The common, synthetic, commercial grades, contain at least 99.5 per cent of sodium nitrate and approximately 16.4 per cent of nitrogen.

Sodium nitrate is not produced in Canada nor does it occur in Canada in the natural form. Total imports declined from 26,000 tons in 1957 to 17,000 tons in 1963, but increased again in 1964 when they were 20,000 tons, valued at more than one million dollars. Until 1962, Canadian requirements were supplied largely from the U.S.A. However, imports from Chile, of the natural form, have been increasing since 1958, and in 1964 were more than 40 per cent of the total imported; imports from the U.K. have continued in small volume.

The principal use of sodium nitrate in Canada is in the production of explosives. About 75 to 80 per cent of the imports are used in this application. It is also used for fertilizers, mining and metallurgy, ceramics, pulp and paper, food preservation and the manufacture of chemicals.

Most of the Canadian market for sodium nitrate is in Ontario and Quebec; 80 per cent of the imports were entered into these provinces in 1962 and 70 per cent in 1963. British Columbia is the only other province in which a substantial amount of the product is entered.

⁽¹⁾ Transcript, Vol. 83, p. 12813

⁽²⁾ Same, Vol. 87, p. 13321

Imports of Nitrate of Soda, by Principal Country of Origin,
Selected Years, 1953-64

	<u>U.S.A.</u>	<u>Chile</u> - tons -	<u>U.K.</u>	<u>Total</u>	
				tons	\$'000
1953	19,568	461	24	20,052	1,043
1955	21,038	323	45	21,426	928
1957	25,136	380	82	25,598	1,085
1959	20,223	1,449	3	21,684	880
1961	10,632	5,661	33	16,356	826
1962	12,198	3,914	11	17,018	921
1963	9,512	7,177	28	16,749	893
1964	11,596	8,581	32	20,210	1,080

Source: D.B.S., Trade of Canada, Imports, s.c. 8157

Imports of Sodium Nitrate, by Province of Entry,
1961-63

	<u>1961</u>	<u>1962</u> - tons -	<u>1963</u>
Atlantic Provinces	393	340	375
Quebec	8,356	7,367	6,485
Ontario	4,563	6,109	5,296
Prairie Provinces	559	1,071	344
British Columbia	<u>2,485</u>	<u>2,130</u>	<u>4,249</u>
Canada	16,356	17,017	16,749

Source: D.B.S., s.c. 8157

Tariff Considerations

Sodium nitrate is entered under tariff item 210e, "nitrate of soda or cubic nitre", free of duty under all Tariffs.

In the Brussels Tariff Nomenclature, sodium nitrate which, in the dry state, contains more than 16.3 per cent of nitrogen is classified under heading 28.39. If it contains 16.3 per cent or less of nitrogen, it is classified with fertilizers under heading 31.02 or 31.05.

Sodium nitrate generally is imported duty-free under item 210e. It may be entered, for use in the manufacture of fertilizers, free of duty under all Tariffs, under item 663b and, for the manufacture of explosives, under item 664a.

At the public hearing, in February 1961, Canadian Industries Limited proposed that sodium nitrate continue to be entered free of duty under all Tariffs, until it is produced in Canada. When it is made in Canada, rates of 15 p.c., B.P. and 20 p.c., M.F.N. should apply. (1)

(1) Transcript, Vol. 27, p. 4016

Consolidated Mining and Smelting Company of Canada Limited and the Canadian Pulp and Paper Association expressed an interest in the chemical. Their proposals were for retention of the existing free entry under item 210e. without any qualification related to the product's production in Canada.⁽¹⁾

The Canadian Federation of Agriculture listed sodium nitrate as a chemical used in fertilizers and requested the continuation of the provisions of items 663 and 663b. Under item 663, for direct use as a fertilizer, the rates are Free, B.P. and 5 p.c., M.F.N., while under item 663b, for use in the manufacture of fertilizers, entry is free under all Tariffs.⁽²⁾ However, as noted above, a more general duty-free provision exists in item 210e.

The Canadian Pharmaceutical Manufacturers Association listed sodium nitrate as one of the more important chemicals used by its members and recommended rates of Free, B.P. and 15 p.c., M.F.N., for chemicals which are not produced in Canada and are used in the manufacture of pharmaceuticals.⁽³⁾

Thus, except for the last proposal, all those who made representations to the Board proposed free entry under both the B.P. and M.F.N. Tariffs, one of the recommendations being qualified by "while not made in Canada."

In support of his proposal, the spokesman for C.I.L. said the product is not now produced in Canada and is unlikely to be made in Canada in the foreseeable future. He indicated that the product constituted about 10 per cent of the cost of materials used in the manufacture of explosives and that an increase in the duty would affect these costs. He did not indicate why rates of 15 p.c., B.P. and 20 p.c., M.F.N., were specifically appropriate for the product if it became made in Canada.

Other consumers of sodium nitrate also took the general position that an increase in the duty on the product would affect their costs and thus their competitive position in the market.

SODIUM NITRITE

Sodium nitrite is a crystalline solid which is not produced in Canada. Its principal uses are in curing meats, dyeing textiles, manufacturing pigments and in metallurgical processes.

Canadian consumption of the chemical has been about 1,100 tons annually, in recent years, valued at about \$90,000. Until a few years ago, the U.K. was the principal supplier of the Canadian market. However, imports from West Germany have been increasing since 1958 and in the past few years Britain and West Germany have supplied about equal amounts. The U.S.A. has been the only other regular supplier of the Canadian market. In 1962 and 1963 substantial quantities were also imported from Poland.

(1) Transcript, Vol. 5, p. 715; Vol. 85, p. 13006

(2) Same, Vol. 83, p. 12813

(3) Same, Vol. 87, p. 13278

Imports of Nitrite of Soda, by Principal Country of Origin,
Selected Years, 1953-63

	<u>U.K.</u>	<u>West Germany</u>	<u>U.S.A.</u>	<u>Other</u>	<u>Total</u>	
		- tons	-		tons	\$'000
1953	434	5	41	-	481	40
1955	487	168	73	30	759	63
1957	465	97	19	-	581	51
1959	346	322	146	-	814	71
1961	301	722	65	-	1,087	89
1962	301	484	49	303 ^(a)	1,136	97
1963	425	397	11	233 ^(a)	1,066	88

(a) Principally Poland

Source: D.B.S., Trade of Canada, Imports, s.c. 8357

The Primary Textiles Institute informed the Board that the consumption by its members had a value of about \$35,000 annually. In the years 1958 to 1960, to which this figure would apply, this would be about one-half of the total imported. The Canadian Color Makers Association reported that in 1958 and 1959, the use by its members had a value of about \$11,000 and \$12,000 in each year, respectively, a little more than ten per cent of the total. Both in its use in the dyeing of textiles and in the manufacture of pigments, the chemical was said to have no satisfactory substitutes.

Tariff Considerations

Sodium nitrite is entered under tariff item 210, where it is listed by name, at Free, B.P., and 12½ p.c., M.F.N.

At the public hearing in February 1961, the Primary Textiles Institute proposed free entry under both the B.P. and M.F.N. Tariffs, until the product is produced in Canada. The spokesman for the Institute said that when it is made in Canada the Institute would not object to rates of 15 p.c., B.P. and 20 p.c., M.F.N., if the Board deemed them to be appropriate.⁽¹⁾

The Canadian Color Makers Association also proposed free entry under the B.P. and M.F.N. Tariffs, but in an end-use item providing for materials for use in the manufacture of synthetic pigments. The spokesman for the Association said, later in the hearing, that he would not object to maintenance of the existing rates (Free, B.P. and 12½ p.c., M.F.N.) for sodium nitrite, if it was thought desirable to retain the preference on imports from the U.K.⁽²⁾

(1) Transcript, Vol. 27, p. 3998-9

(2) Same, Vol. 27, p. 4008, 4014

Imperial Chemical Industries Limited, of London, England, the only British supplier, urged retention of the existing rates until the chemical was made in Canada.⁽¹⁾

The Consolidated Mining and Smelting Company of Canada Limited listed sodium nitrite as a chemical which the company imported for its own use and requested that rates of duty should not be increased on chemicals used by Canadian manufacturers, to prevent an increase in the costs of Canadian manufacturers.⁽²⁾

Polymer Corporation expressed an interest in the chemical and urged continuation of the end-use provisions of item 851, with free entry under all Tariffs, for chemicals used in the manufacture of synthetic rubber.⁽³⁾

Naugatuck Chemicals expressed an interest in the product but did not indicate its position with respect to chemicals that are not produced in Canada.⁽⁴⁾

The Canadian Pharmaceutical Manufacturers Association referred to sodium nitrite as a chemical of little economic importance to its members and recommended rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for chemicals not produced in Canada and used in the manufacture of pharmaceuticals.⁽⁵⁾

Thus, apart from the end-use interests, the proposals before the Board were for free entry under the B.P. and M.F.N. Tariffs or for the retention of the existing rates of Free, B.P. and 12½ p.c., M.F.N.

The consumers who made submissions to the Board were generally concerned about the effect of the M.F.N. duty on their costs. (Entry is duty-free under the B.P. Tariff of all of the relevant items.) Imperial Chemical Industries expressed concern about the competition from Western Germany. Its spokesman drew attention to increasing imports from the latter country and said:

"I think Imperial Chemical Industries would also like to have it recorded again that, as it has mentioned in earlier briefs, the Minister, in referring this inquiry to the Board, asked the Board to have in mind the general maintenance of the existing margins of preference."⁽⁶⁾

The Industry Committee repeated its general, standing objection to end-use items. Its spokesman said that if low rates or free entry were recommended, the Committee would prefer that these apply to all imports rather than only to imports for specific uses.⁽⁷⁾

(1) Transcript, Vol. 27, p. 4002

(2) Same, Vol. 5, p. 715

(3) Same, Vol. 89, p. 13501

(4) Same, Vol. 6, p. 902

(5) Same, Vol. 87, p. 13321

(6) Same, Vol. 27, p. 4013

(7) Same, Vol. 27, p. 4014

STRONTIUM NITRATE

Strontium nitrate is a crystalline powder used for red colours in pyrotechnics and in the manufacture of matches. It is not produced in Canada and most Canadian supplies are imported from the U.S.A., with relatively small amounts also being supplied by the U.K.

The known consumption of the chemical, in Canada, has declined from 400 tons in 1957, to less than 200 tons in 1962. The value of consumption in 1962 was about \$50,000. Apart from its use in explosives, no other application is known in Canada.

Tariff Considerations

Strontium nitrate is entered under tariff item 208t at rates of Free, B.P. and 15 p.c., M.F.N., and under item 664a, "nitrate compounds not elsewhere specified adapted for use in the manufacture of explosives", free of duty under all Tariffs. The available information indicates that most imports would be entered under item 664a.

At the public hearing on item 664a, in November 1962, Canadian Industries Limited (C.I.L.) proposed continued duty free entry until the product is made in Canada. The company did not indicate the rates which it would consider appropriate when the product is made in Canada, but in several other submissions the company took the position that rates of 15 p.c., B.P. and 20 p.c., M.F.N. should be applied to chemicals that are produced in Canada.⁽¹⁾

No other representations were made to the Board dealing specifically with strontium nitrate.

The spokesman for C.I.L. said there was no known substitute for the chemical in the manufacture of fusees, the only product of the company for which strontium nitrate is used. He also said that its use has declined because of the introduction of automatic signalling devices by railroads and that there was little prospect of its being produced in Canada.

OTHER PRODUCTS OF HEADING 28.39

Two products of heading 28.39, calcium nitrate and ferric nitrate, were brought to the attention of the Board by the Canadian Federation of Agriculture and the Canadian Pharmaceutical Manufacturers Association. Neither of these is known to be made in Canada, and no information is available regarding ferric nitrate.

In the B.T.N., calcium nitrate is classified under heading 28.39 if it contains more than 16 per cent of nitrogen, and with fertilizers under headings 31.02 and 31.05, if it contains 16 per cent or less of nitrogen. The submission of the Federation of Agriculture gave no indication regarding the purity of the material to which reference was made, although it was shown in their list as a product

⁽¹⁾ Transcript, Vol. 107, p. 16199-200

under heading 28.39. The product of interest to the Federation probably was listed as a constituent of prepared fertilizers. It is discussed with the nitrogen fertilizers of heading 31.02. Calcium nitrate is also used in explosives and for this purpose it is entered under item 664a, free of duty under all Tariffs. If it is not entered for fertilizers or explosives, it is classified in tariff item 208t at rates of Free, B.P. and 15 p.c., M.F.N.

The Canadian Pharmaceutical Manufacturers Association expressed an interest in ferric nitrate. The Association indicated that the chemical was of minor economic importance to its members and recommended rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided, for chemicals not made in Canada and used in the production of pharmaceuticals. When made in Canada, rates of 15 p.c., B.P. and 20 p.c., M.F.N., were proposed.⁽¹⁾

No other representations made to the Board specifically concerned the products of B.T.N. heading 28.39; nor has the Board information of the commercial importance of other products of this heading.

Nitrate of lead, not ground, when for use in the manufacture of chlorates and colours is provided for at rates of Free, B.P., 10 p.c., M.F.N. under item 488; otherwise it is dutiable under item 208t, Free, B.P., 15 p.c., M.F.N.

The analytical reagent grade of cobalt nitrate is ruled not to be made in Canada; it would be dutiable under item 208t or, if for use in the manufacture of animal feeds, duty-free under item 219h. This latter item is not in Reference 120. Other grades are dutiable under item 711.

In various submissions the Industry Committee took the general position that products for which specific tariff treatment was not proposed by others should be subject to rates of 15 p.c., B.P. and 20 p.c., M.F.N., in tariff items worded like the relevant headings of the Brussels Tariff Nomenclature. In the case of heading 28.39, this proposal would apply to nitrites and nitrates which have not been referred to in this Section. It would also apply to imports of the products discussed, if intended for uses other than those for which specific end-use proposals were made to the Board. For example, calcium nitrate, for other than fertilizer use and ferric nitrate used in applications other than the manufacture of pharmaceuticals, would be subject to rates of 15 p.c., B.P. and 20 p.c., M.F.N. in the Industry Committee's proposal.

⁽¹⁾ Transcript, Vol. 87, p. 13321-2

PHOSPHITES, HYPOPHOSPHITES AND PHOSPHATES - B.T.N. 28.40Introduction

The phosphites, hypophosphites and phosphates in Brussels heading 28.40 constitute a large group of chemicals one of which, sodium tripolyphosphate, has an annual commercial value considerably greater than all of the others combined. Ammonium phosphate, fertilizer grade, is much more important, commercially, than even sodium tripolyphosphate but it is classified with the fertilizers of heading 31.05 and does not enter into the present discussion.

Almost all of the products of B.T.N. heading 28.40 are produced by the reaction of phosphoric acid with other chemicals. "Electro-thermal" acid is very pure and yields products of very high purity; "wet process" acid is less pure and generally contains small amounts of arsenic. Wet process acid is used in the production of ammonium phosphate, fertilizer grade, and yields a product which contains six milligrammes or more of arsenic per kilogramme. Under the Brussels Tariff Nomenclature, this ammonium phosphate would therefore be classified under heading 31.05 and is discussed in this report under that heading. Ammonium phosphate which contains less than six milligrammes of arsenic per kilogramme is included in the discussion which follows.

The chemicals that are classified under heading 28.40 are ordinarily produced by the use of electro-thermal phosphoric acid. In Canada, only the Electric Reduction Company of Canada Limited (Erco) produces electro-thermal acid, at its plant at Buckingham, Quebec. This plant is also the only Canadian producer of the chemicals of heading 28.40.

Alternative names are frequently applied to the products of heading 28.40 because of the use of different systems of nomenclature. In the tabulation which follows, the more important chemicals of the group are given, showing the name by which they were commonly designated at the public hearing, and the name under which they are classified in the Brussels Nomenclature. In the notes on the Recommended Items an attempt has been made to reproduce most of the alternative names for a number of the products in this heading.

Names Used at HearingDesignation in the B.T.N.Made in Canada*

Calcium phosphate monobasic	Calcium tetrahydrogen diorthophosphate
Sodium acid pyrophosphate	Sodium acid pyrophosphate
Sodium hexametaphosphate	Sodium hexametaphosphate
Sodium phosphate dibasic	Disodium hydrogen orthophosphate
(Disodium phosphate, D.S.P.)	
Sodium phosphate monobasic	Sodium dihydrogen orthophosphate
Sodium phosphate tribasic	Trisodium orthophosphate
(Trisodium phosphate, T.S.P.)	
Tetrasodium pyrophosphate	Tetrasodium pyrophosphate
(T.S.P.P.)	
Sodium tripolyphosphate	Pentasodium triphosphate
(S.T.P.P.)	

Names Used at HearingDesignation in the B.T.N.Not Made in Canada

Ammonium phosphate dibasic	Diammonium orthophosphate
Ammonium phosphate monobasic	Ammonium dihydrogen orthophosphate
Calcium phosphate dibasic (Dicalcium phosphate, D.C.P.)	Calcium hydrogen orthophosphate
Potassium phosphate tribasic	Tripotassium orthophosphate
Tetrapotassium pyrophosphate (T.K.P.P.)	Tetrapotassium pyrophosphate
Sodium metaphosphate (insoluble)	Sodium metaphosphate
Trisodium phosphate, anhydrous (T.S.P.)	Trisodium orthophosphate

* For some products, not all grades are made in Canada

The chemicals of B.T.N. heading 28.40 have their principal applications in the treatment of water supplies and in the manufacture of tooth pastes, detergents, cleansers and baking powder. Most of the commercial requirements are for grades of high purity.

As noted above, the inorganic phosphates of heading 28.40 are produced by only one company in Canada. The principal consumers of the large bulk of the commercial sales are a small group of manufacturers of tooth pastes, detergents and cleansers. The existence of only one producer makes it difficult to publish some information and the concentration of producer and consumer interests would require a considerable amount of repetition if the chemicals of heading 28.40 were to be dealt with separately. In view of these circumstances, most of the discussion which follows deals with these chemicals as a group.

The Market for Phosphates

In 1962, the market in Canada for the inorganic phosphates of B.T.N. heading 28.40 is estimated to have been in excess of \$10 million annually, over 80 per cent of which was supplied from domestic production. Well over half of the total value was accounted for by one product, sodium tripolyphosphate, by far the largest part of which is supplied from Canadian production. In 1962 about 45,000 tons of this chemical were consumed in Canada, with a value of approximately \$7.5 million. In addition there are eight other phosphates each of which had an annual market value in 1962 in excess of \$200,000. Only two of these were not made in Canada; for five of the other six, domestic production accounted for the largest part of the supply. All of the other known products of heading 28.40, combined, had an annual sales value of the order of \$800,000 annually. The nine major products of the group account for nearly 95 per cent of the total market value of the whole group.

Of the nine major phosphates, seven are produced in Canada by the Electric Reduction Company, while two of the nine and a large number of other, less important, phosphates are not made in Canada. The nine major chemicals of the group are tabulated below in the approximate order of their commercial importance, in 1962.

<u>Product</u>	<u>Principal Use</u>	<u>Approximate Annual Consumption \$'000</u>
<u>Made in Canada</u> *		
Sodium tripolyphosphate	dry detergents	8,000
Trisodium phosphate (12 hydrate)	dry detergents, cleansers	700
Sodium hexametaphosphate	water treatment, dry detergents	(a)
Tetrasodium pyrophosphate	washing compounds, water treatment	(a)
Calcium phosphate monobasic	baking powder, cake mixes	(a)
Sodium phosphate dibasic	water treatment, foods, textiles	(a)
Sodium acid pyrophosphate	baking powder, drilling muds	(a)
<u>Not made in Canada</u>		
Tetrapotassium pyrophosphate (T.K.P.P.)	liquid detergents	400 ^(b)
Calcium phosphate dibasic (Dicalcium phosphate, D.C.P.)	tooth paste	200 ^(b)
Others		750 ^(b)

* For some products, not all grades are made in Canada

(a) Insufficient public data available, but exceeds \$200,000

(b) Based on estimated imports, cf. following table

Source: Various publications of D.B.S. and trade papers and magazines

Although the inorganic phosphates are used in a large number of applications, the bulk of their utilization is in the manufacture of dry and liquid detergents and tooth pastes. Erco estimated that about 80 per cent of Canadian consumption of these chemicals was for those purposes. Other fairly important uses are in the manufacture of baking powder and the treatment of water supplies.

Most of the Canadian market for phosphates is in the heavily populated areas of Ontario and Quebec, particularly in the Toronto-Hamilton area of Ontario, where most of Canada's detergent manufacturing is located.

The Canadian market for phosphates has increased steadily in recent years. In the five years, 1958 to 1962, the value of sales in Canada is estimated to have risen by about 17 per cent; most of this growth is accounted for by substantial increases in the consumption of sodium tripolyphosphate, tetrapotassium pyrophosphate and sodium hexametaphosphate. During the same period, sales of tetrasodium pyrophosphate declined very sharply and in 1962 were only about one-half their value in 1958.

Imports

Imports are a relatively small part of the Canadian consumption of those phosphates produced in Canada. In most recent years about 90 per cent of the value of sales of types made in Canada has been supplied by Erco. However, the Canadian manufacturer does not produce some of the important phosphates used in tooth pastes such as calcium phosphate dibasic and insoluble sodium metaphosphate nor tetrapotassium pyrophosphate (T.K.P.P.), the principal phosphate used in formulations of heavy duty, liquid detergents. The value of imports of these latter products increased from about \$270,000 in 1957 to an estimated \$670,000 in 1962. In addition, many other phosphates, none of which is produced in Canada, are being imported. As a result imports of all phosphates combined are about 20 per cent of the value of Canadian consumption, although more than half the imports consist of products not available from Canadian production.

Imports of Selected Phosphates, 1957, 1960 and Estimated 1962

	<u>1957</u>	<u>1960</u> \$'000	Est. <u>1962</u>
<u>Kinds made in Canada</u> *			
Sodium tripolyphosphate	84	243	232 ^(a)
Sodium hexametaphosphate	207	452	500
Trisodium phosphate (hydrated)	38	95	65
Sodium phosphate dibasic	32	63	65
Others	<u>237</u>	<u>132</u>	<u>130</u>
Total of kinds made	597	985	992
<u>Kinds not made in Canada</u>			
Tetrapotassium pyrophosphate (T.K.P.P.)	119	338	400
Calcium phosphate dibasic	104	181	200
Ammonium phosphate	28	79	100
Trisodium phosphate (anhydrous)	4	64	85
Sodium metaphosphate (insoluble)	44	63	70
Potassium phosphate (mono- and tribasic)	29 ^(b)	68	70
Others	<u>275</u>	<u>228</u>	<u>436</u>
Total of kinds not made	603	1,021	1,361
Total Estimated Imports	1,200	2,006	2,353

* For some products, not all grades are made in Canada

(a) 1963 imports

(b) 1958 data; not available for 1957

Source: Dept. of Trade and Commerce, Industrial Development Branch

Imports have been increasing in recent years and nearly doubled in value between 1957 and 1962. About one-third of the increase has been of products made in Canada, sodium tripolyphosphate and sodium hexametaphosphate accounting for most of that increase. Of the products not made in Canada, about one-third of the increase is attributable to tetrapotassium pyrophosphate, the remaining two-thirds being accounted for by a number of products. The available

data indicate that 99 per cent or more of all imports are from the U.S.A., with occasional small imports from France, Germany and the U.K.

Transportation and Prices

In Canada, the phosphates of heading 28.40 are sold f.o.b. Buckingham, Quebec. However, freight allowances are made to some destinations to meet competition from producers in the U.S.A. The location of Erco relative to consumers in Quebec and in most of Ontario east of Toronto gives the company a substantial freight advantage in this region over potential competitors in the U.S.A. However, the company indicated that for deliveries to the Toronto-Hamilton area a slight freight absorption is required to remain competitive with the U.S. product. The amount of freight which the company absorbs differs with various products and increases west of Toronto.

The principal competition in the Toronto-Hamilton area arises from producers at Chicago, Illinois, Trenton, Michigan (near Detroit), Nashville, Tennessee and Cartaret, New Jersey; not all products are produced at each of these locations. For sales in the Winnipeg area, Chicago is the nearest point in the U.S.A. and for sales in British Columbia, a plant at Newark, California, is the principal competitor. Although the U.S. plants are not near the major Canadian consumption area, the Canadian producer also is a considerable distance from the Toronto-Hamilton area, where 80 per cent or more of the utilization of phosphates occurs. It is approximately 300 miles from Buckingham to Toronto compared with distances of 450 miles or more from the principal potential suppliers in the U.S.A.

At the time of the hearing, February 1961, Erco had a substantial freight advantage over U.S. competitors, in the area east of Toronto. For delivery in Montreal of sodium tripolyphosphate the advantage was \$5.60 per ton, for trisodium phosphate \$16.00 per ton, and for calcium phosphate monobasic \$29.40 a ton. Relative to U.S. prices of these products, at that time, the advantages were equivalent to tariffs of 4 p.c., 10 p.c. and 20 p.c., respectively. At Toronto Erco's freight advantage over the nearest suppliers in the U.S.A. was equivalent to 4 per cent for sodium tripolyphosphate, 2 per cent for trisodium phosphate and 14 per cent for calcium phosphate monobasic. At that time these three products constituted a large proportion of the total sales in Canada of all phosphates.

Erco was at a considerable disadvantage in Vancouver, amounting to about \$30.00 a ton, for the two principal products, sodium tripolyphosphate and trisodium phosphate. However, freight concessions by the railways, since then, have narrowed the disadvantage very considerably. In September 1964, the Erco freight-cost disadvantage to Vancouver on the two products amounted to \$6.00 a ton, or the equivalent of approximately four per cent of the U.S. price expressed in Canadian funds.

Prices, f.o.b. plant, are considerably higher than prices in the U.S.A. The table which follows suggests that Erco's prices f.o.b. Buckingham are set so that generally the delivered price in

Toronto and Hamilton is slightly below the price of U.S. products delivered to these destinations, inclusive of exchange, duty and freight.

Prices of Major Phosphates, in Canada and the U.S.A., f.o.b.
Plant, and Delivered at Toronto, Carloads, Bags,
December 1960

	f.o.b. plant		delivered Toronto	
	Can.	U.S.A. \$Can. per 100 pounds	Can.	U.S.A.
Calcium phosphate monobasic	9.70	7.32	10.18	10.80
Sodium acid pyrophosphate	12.90	10.90	13.38	14.40
Sodium phosphate dibasic (anhydrous)	9.70	7.81	10.18	10.15
Sodium hexametaphosphate	12.95	10.90	13.43	13.86
Sodium phosphate monobasic	10.90	8.84	11.38	11.83
Sodium tripolyphosphate	9.50	7.66	9.98	9.97
Tetrasodium pyrophosphate	9.10	7.42	9.58	9.68
Trisodium phosphate	5.55	4.67	6.03	6.38

Source: Canadian Chemical Processing; Oil, Paint and Drug Reporter; freight rates from railways and agreed charges; Transcript, Vol. 28, p. 4057

Since December 1960, the value of the Canadian dollar has declined in terms of U.S. currency and the margins between delivered prices, in Toronto, of Canadian and U.S. production have widened. Since December 1960, some U.S. prices have risen slightly and some have declined; in Canada, prices have generally risen, in this period.

Changes in f.o.b. Prices per 100 lbs., Selected Phosphates,
in Canada and the U.S.A. from December 1960
to September 1964

	Canada		U.S.A.	
	\$Can.	%	\$U.S.	%
Calcium phosphate monobasic	+ .65	+ 6.7	0	0
Sodium acid pyrophosphate	+ .60	+ 4.7	+ .15	+ 1.4
Sodium phosphate dibasic (anhydrous)	..	..	+ .15	+ 1.9
Sodium hexametaphosphate	+ .55	+ 4.2	0	0
Sodium phosphate monobasic	..	..	+ .15	+ 1.7
Sodium tripolyphosphate	0	0	.60	- 7.6
Trisodium phosphate 12 hydrate	+ .30	+ 5.4	- .25	- 5.3
anhydrous	..	..	+ .20	+ 2.2

Source: Canadian Chemical Processing and Oil, Paint and Drug Reporter

Tariff Considerations

The phosphates of heading 28.40 are entered under three tariff items, 208t, 218 and 711, and under certain end-use items, some of which are noted in the following outline of proposals. Phosphates which meet the specifications of the U.S.P., B.P. or French Codex and are not deemed to be made in Canada are entered under item 208t, Free, B.P. and at 15 p.c., M.F.N. If they are of such purity and are ruled to be made in Canada, they are entered under item 711, at 15 p.c., B.P. and 20 p.c., M.F.N. If they are of a lesser purity they may be entered under item 218, "acid phosphate, not medicinal", or if not an "acid phosphate", under either item 711 or 208t, depending on whether they are deemed or not to be made in Canada.

The principal phosphates are listed below together with the tariff item under which they would ordinarily be entered. Not all grades of the products listed as "made in Canada" are made in Canada.

<u>Products made in Canada</u>	<u>Existing Tariff Item</u>	<u>Existing Rates</u>	
		<u>B.P.</u>	<u>M.F.N.</u>
Calcium phosphate monobasic	218	Free	25 p.c.
Sodium acid pyrophosphate	218	Free	25 p.c.
Sodium hexametaphosphate	711	15 p.c.	20 p.c.
Sodium phosphate dibasic	218	Free	25 p.c.
Sodium phosphate monobasic	218	Free	25 p.c.
Sodium phosphate tribasic (hydrated)	711	15 p.c.	20 p.c.
Tetrasodium pyrophosphate	711	15 p.c.	20 p.c.
Sodium tripolyphosphate	711	15 p.c.	20 p.c.
Sodium pyrophosphate	711	15 p.c.	20 p.c.

<u>Products not made in Canada</u>	<u>Existing Tariff Item</u>	<u>Existing Rates</u>	
		<u>B.P.</u>	<u>M.F.N.</u>
Ammonium phosphate dibasic	218	Free	25 p.c.
Ammonium phosphate monobasic	218	Free	25 p.c.
Calcium phosphate dibasic	218	Free	25 p.c.
Potassium phosphate tribasic	208t	Free	15 p.c.
Tetra potassium pyrophosphate	208t	Free	15 p.c.
Sodium metaphosphate (insoluble)	208t	Free	15 p.c.
Trisodium phosphate (anhydrous)	208t	Free	15 p.c.

In the Brussels Tariff Nomenclature, heading 28.40 excludes natural calcium phosphates and other natural mineral phosphates (chapters 25 and 26). It also excludes calcium hydrogen phosphate (calcium phosphate dibasic) containing 0.2 per cent or more of fluorine (heading 31.03 or 31.05) and ammonium phosphates containing 6 milligrammes or more of arsenic per kilogramme (heading 31.05).

Most of the phosphates eligible for entry under item 208t would be classified under heading 28.40. However, some of the ammonium phosphates and calcium phosphate dibasic that are eligible for entry under items 218 and 208t, respectively, might be insufficiently pure, according to the B.T.N., to be classified under heading 28.40.

At the public hearing on phosphates, in February 1961, and at other hearings, proposals were made to the Board related to a large number of the products of heading 28.40. At the hearing on phosphates the proposals were supported by arguments related to particular products; at the other hearings the proposals were more general in nature and often part of general recommendations involving end-use interests.

The Canadian producer, Electric Reduction Company of Canada Limited (Erco), proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., for all of the phosphates produced by the company. The company also proposed rates of Free, B.P. and either 10 p.c., or 15 p.c., M.F.N., for ten other phosphates not made in Canada, and rates of 15 p.c., B.P. and 20 p.c., M.F.N., for all other products of heading 28.40 of the B.T.N.⁽¹⁾ The specific proposals of the company are tabulated below; the company's proposals contained no specifications as to grade.

<u>Name in the B.T.N.</u>	<u>Name Used</u>	<u>Existing Rates</u>	
		<u>B.P.</u>	<u>M.F.N.</u>
<u>Products made in Canada</u>			
(Proposed rates 15 p.c., B.P., 20 p.c., M.F.N.)			
Calcium tetrahydrogen diorthophosphate	Calcium phosphate monobasic	Free	25 p.c.
Sodium acid pyrophosphate	same	Free	25 p.c.
Sodium dihydrogen orthophosphate	Sodium phosphate monobasic	Free	25 p.c.
Disodium hydrogen orthophosphate	Sodium phosphate dibasic	15 p.c.	20 p.c.
Pentasodium triphosphate	Sodium tripolyphosphate	15 p.c.	20 p.c.
Sodium hexametaphosphate	same	15 p.c.	20 p.c.
Trisodium orthophosphate	Sodium phosphate tribasic dodecahydrate	15 p.c.	20 p.c.
Tetrasodium pyrophosphate	same	15 p.c.	20 p.c.
<u>Products not made in Canada</u>			
(Proposed rates Free, B.P., 15 p.c., M.F.N.)			
Ammonium dihydrogen orthophosphate	Ammonium phosphate monobasic	Free	25 p.c.
Diammonium hydrogen orthophosphate	Ammonium phosphate dibasic	Free	25 p.c.
Dipotassium hydrogen orthophosphate	Potassium phosphate dibasic	Free	25 p.c.
Potassium dihydrogen orthophosphate	Potassium phosphate monobasic	Free	15 p.c.
Tripotassium orthophosphate	Potassium phosphate tribasic	Free	15 p.c.
(Proposed rates Free, B.P., 10 p.c., M.F.N.)			
Calcium hydrogen orthophosphate	Calcium phosphate dibasic	Free	15 p.c.
Dicalcium pyrophosphate	same	Free	15 p.c.
Sodium metaphosphate	same		
	(insoluble)	Free	15 p.c.
Tetrapotassium pyrophosphate	same	Free	15 p.c.
Trisodium orthophosphate (anhydrous)	Trisodium phosphate anhydrous	Free	15 p.c.

(1) Transcript, Vol. 28, p. 4055, 4059

Erco qualified its rates proposals for the phosphates not produced in Canada to apply only until the products were made in Canada, at which time rates of 15 p.c., B.P. and 20 p.c., M.F.N., should apply.

The United Kingdom is not a competitive producer of phosphates and the proposals of Erco relative to the British Preferential rates would have a negligible effect on trade. Nevertheless, the proposals of Erco would increase the British Preferential rates from free to 15 p.c. on three of the eight products which the company produces in Canada. On the other five products the existing British Preferential rate is 15 p.c. and, with respect to these, the company recommended no change. On the three chemicals for which Erco proposed increases in the British Preferential rates, it also recommended a decrease in the Most-Favoured-Nation rate, from 25 p.c. to 20 p.c.

Erco's proposals for the products made in Canada were generally supported by Colgate-Palmolive Limited (Colgate), Lever Brothers Limited (Lever), and Procter and Gamble Company of Canada Limited, (P. & G.).⁽¹⁾ These three companies, as major manufacturers of synthetic detergents and toothpastes, would account for a large part of Erco's sales in Canada.

However, the three companies opposed the recommendations of the Canadian producer for products not available from Canadian production. For the chemicals in which they expressed an interest the detergent manufacturers proposed free entry until made in Canada, under both the B.P. and M.F.N. Tariffs. When the products are made in Canada the companies supported rates of 15 p.c., B.P. and 20 p.c., M.F.N. The individual company interests are tabulated below.

<u>Name in the B.T.N.</u>	<u>Name Used</u>	<u>Company Interest</u>
Calcium hydrogen orthophosphate	Calcium phosphate dibasic	-
dihydrate		Colgate, Lever and P & G
anhydrous		P & G
Dicalcium pyrophosphate	same	P & G
Sodium metaphosphate	same (insoluble)	Lever
Tetrapotassium pyrophosphate	same	Lever, P & G
Trisodium orthophosphate (anhydrous)	same	Colgate

The Primary Textiles Institute opposed the Erco proposal for ammonium phosphate dibasic and recommended free entry under both the British Preferential and Most Favoured Nation Tariffs, until the product was produced in Canada; it supported the proposal for rates of 15 p.c., B.P. and 20 p.c., M.F.N. when the product is made in Canada.⁽²⁾

Consolidated Mining and Smelting Company of Canada Limited (Cominco) proposed free entry for ammonium phosphates.⁽³⁾ It was clear from the discussion at the hearing that the company's interest

(1) Transcript, Vol. 28, p. 4174, 4175, 4196, 4197; Vol. 29, p. 4217

(2) Same, Vol. 28, 4160, 4161, 4164

(3) Same, Vol. 28, p. 4153

was mainly in products whose purity was unlikely to be sufficiently high to bring them within heading 28.40. Cominco's interest in these is discussed with the other fertilizers of B.T.N. Chapter 31; however, it did not limit its proposals to the products of heading 31.05 and its proposal would therefore also apply to the ammonium phosphates of heading 28.40.

At a later hearing the Canadian Federation of Agriculture urged that all chemicals used in the manufacture of fertilizers be entered free of duty under the B.P. and M.F.N. Tariffs, and supported rates of Free, B.P. and 5 p.c., M.F.N. for chemicals used as fertilizers.⁽¹⁾ These are the existing rates under tariff items 663b and 663 respectively. The Federation listed the following phosphates as chemicals used in fertilizers and in which it had an interest:

diammonium phosphate	magnesium ammonium phosphate
ammonium phosphate	magnesium phosphate
dicalcium phosphate	

It is probable that the ammonium phosphates and calcium phosphate listed here, would, under the B.T.N., be of grades classified in Chapter 31 instead of in Chapter 28; magnesium ammonium phosphate is classified under heading 28.48.

The Federation also urged free entry under both the B.P. and M.F.N. Tariffs, for chemicals used in the manufacture of pesticides⁽²⁾ and listed the following as being chemicals so used:

ammonium phosphate
calcium phosphate

Polymer Corporation Limited proposed that all chemicals used in the manufacture of synthetic rubber continue to be entered free of duty as under existing item 851.⁽³⁾ Polymer listed the following phosphates among the chemicals in which it had an interest.

tripotassium phosphate	sodium hexametaphosphate
potassium phosphate tribasic	trisodium phosphate

The Canadian Pulp and Paper Association opposed any increase in rates of duty for chemicals used by its members.⁽⁴⁾ The Association listed the following phosphates as chemicals used by its members.

diammonium phosphate	sodium phosphate monobasic
monoammonium phosphate	sodium polyphosphates
potassium phosphates	sodium tripolyphosphate
sodium hexametaphosphate	tetrasodium pyrophosphate
sodium metaphosphate	trisodium phosphate
disodium phosphate	

(1) Transcript, Vol. 83, p. 12813

(2) Same, Vol. 110, p. 16631

(3) Same, Vol. 89, p. 13501

(4) Same, Vol. 85, p. 13006 and letter dated Sept. 21, 1964

The Canadian Pharmaceutical Manufacturers Association recommended that all chemicals used in the manufacture of pharmaceutical products be entered at rates of Free, B.P. and 15 p.c., M.F.N., until they are made in Canada, unless otherwise provided for, and at 15 p.c., B.P., 20 p.c., M.F.N. when made.⁽¹⁾ The Association submitted a list of 21 chemicals of heading 28.40 in which its members had an interest, but for only six of the group were annual purchases of more than \$1,000 reported to the Association. The chemicals are listed below according to whether or not they are made in Canada.

Made in Canada - proposed rates 15 p.c., B.P., 20 p.c., M.F.N.

sodium hexametaphosphate
disodium hydrogen orthophosphate
sodium dihydrogen orthophosphate
trisodium orthophosphate

Not made in Canada - proposed rates Free, B.P., 15 p.c., M.F.N.

calcium hydroxyphosphate	ferric pyrophosphate
calcium hypophosphate	magnesium hydrogen orthophosphate
calcium hypophosphite	manganese hypophosphite
calcium hydrogen orthophosphate	potassium hypophosphite
calcium phosphate dibasic*	potassium metaphosphate
calcium tetrahydrogen	dipotassium hydrogen
diorthophosphate	orthophosphate
tricalcium diorthophosphate	potassium dihydrogen
calcium phosphate tribasic*	orthophosphate
ferric hypophosphite	sodium hypophosphite
ferric phosphate	

* Same as chemical listed immediately above

Associated Lead Manufacturers of England and their Canadian representative, The Pigment and Chemical Company Limited of Montreal, urged continued free entry under the B.P. Tariff for lead phosphite dibasic, as under existing end-use item 921 (for use in the manufacture of plastics).⁽²⁾ Item 921 specifies "materials of a kind not produced in Canada". The Canadian Titanium Pigments Limited informed the Board, in a letter dated April 10, 1963, that it was then producing this product in Canada and that the Department of National Revenue had ruled it to be of a kind made in Canada. Since March 5, 1962, lead phosphite dibasic has been entered under tariff item 711 at rates of 15 p.c., B.P. and 20 p.c., M.F.N. These rates were recommended by Canadian Titanium Pigments for stabilizers for vinyl resins.⁽³⁾

Erco's support for rates of 15 p.c., B.P. and 20 p.c., M.F.N., for chemicals which the company produced in Canada, was based on its claim of higher costs of producing phosphates than its competitors in the U.S.A. Most of the potential competitors in the U.S.A. are located at a considerable distance from the principal Canadian market areas.

(1) Transcript, Vol. 85, p. 13321

(2) Same, Vol. 29, p. 4224

(3) Same, Vol. 116, p. 17508

The analysis of Erco's position relative to elemental phosphorus, electro-thermal phosphoric acid and the phosphates indicates that for the products which it produces the company supplies almost all of the Canadian demand. Imports are only a very small part of Canadian supplies and occur mainly in a few areas which are more economically supplied by United States producers, for example Alberta and British Columbia.

Imports of phosphorus are negligible and the company spokesman said, at that hearing, that "there is no active competition through importation of phosphorus into Canada."⁽¹⁾ Phosphorus is entered under item 208p, Free, B.P. and at 20 p.c., M.F.N. Erco has a very substantial freight advantage over U.S. producers, in shipping phosphorus to Canadian points of consumption.⁽²⁾ However, most of the phosphorus is not consumed as such, but is converted, captively, into electro-thermal phosphoric acid. In turn, more than 90 per cent of the acid is converted into phosphates; only a relatively small amount is sold as the acid.

Imports of electro-thermal phosphoric acid are also negligible. In 1962, imports of 374 tons were reported, of which 354 tons were entered in Alberta and British Columbia. Imports entered in those parts of Canada within economic shipping distance of Erco's plant at Buckingham were negligible. The freight advantage to Erco, in the region east of Manitoba, is such that it is doubtful that electro-thermal phosphoric acid from the U.S.A. would be competitive with Erco's production in most of this region even without any tariff protection. Electro-thermal acid is entered under item 216b, Free, B.P. and at 25 p.c., M.F.N.

It should be noted that Erco produces phosphorus at Varennes, Quebec, which is then shipped to Buckingham, Quebec, at a cost of \$8.00 a ton, for conversion into phosphoric acid and then phosphates. Most of the phosphates are consumed in the Toronto-Hamilton area of Ontario and the lowest cost of shipment, by rail, in bags, from Buckingham to Toronto, is 48 cents a hundredweight, or \$9.60 a ton.

The Buckingham location would appear to be the result, principally, of historical rather than current considerations. In terms of current economic advantage, whatever elements of lower cost may be derived from producing at Buckingham rather than in the Toronto-Hamilton area have to offset additional costs of freight and handling, not only of the phosphates but also of the phosphorus. These additional costs, for sodium tripolyphosphate, for example, probably amount to about 10 per cent of the U.S. price, f.o.b. plant, in bags.

Relative to most of the Canadian market, producers in the U.S.A. are even more unfavourably located than is Erco's Buckingham plant. Erco's more favourable location, in conjunction with the protection of the existing tariff has permitted the Canadian producer to hold most of the Canadian market in spite of f.o.b. plant prices which are about 20 per cent higher than those in the U.S.A.

⁽¹⁾ Transcript, Vol. 7, p. 1023

⁽²⁾ See section dealing with phosphorus, B.T.N. 28.04

The principal points of contention between Erco and some consumers were related to products not made in Canada. The manufacturers of toothpastes and detergents, and other consumers as well, generally took the position that duties on such chemicals would only serve to increase their costs of manufacturing without giving any benefit to Canadian producers. The consumers drew attention to the fact that for those chemicals which accounted for the bulk of the imports there were no substitutes. The spokesmen for the detergent manufacturers said that any protection on chemicals not made in Canada and for which there were no Canadian substitutes constituted a penalty on secondary manufacturing industries without compensatory benefits to other Canadian manufacturers. The detergent manufacturers also drew attention to the probability that Canadian manufacture might not occur for many years.

Erco took the position that all products, whether or not they are made in Canada, should be dutiable. The company spokesman said that there are very few chemicals which can be produced in Canada without tariff protection. If these products are entered free of duty while they are not made in Canada the rate at which the market develops is accelerated. When they are produced in Canada and the necessary tariff protection to enable such production is imposed, the price of the domestic product is set "a degree within the amount of protection offered ... thereby having the effect of raising cost [to the purchaser]".⁽¹⁾ The rise in cost engenders resentment on the part of purchasers and therefore it is preferable to have a duty on products not made in Canada in order that Canadian consumers should not become accustomed to the lower prices of imported goods.

The discussion of these points led to the following exchange:

"Q. ... If this is so is this not tantamount to saying that Canadian production would be uneconomic? If by a low rate of duty you accustom the Canadian user, or purchaser, or consumer, to a given price level when there is no Canadian production, is Canadian production then not an uneconomic thing if, later, it involves this price level in a considerable rise?

"A. ... At the national level we think there is advantage to Canada to encourage as much manufacture in this country as possible, which goes beyond the economics affecting a particular product..."⁽²⁾

The company spokesman said that Erco expected to produce some of these chemicals in Canada, in the near future, and that consumers would object to higher prices when this occurred. The consumers who supported rates of 15 p.c., B.P. and 20 p.c., M.F.N., when the products are made in Canada, did not indicate why these rates would be specifically appropriate, although they said that their costs would increase as a result of the tariff.

⁽¹⁾ Transcript, Vol. 28, p. 4112

⁽²⁾ Same, Vol. 28, p. 4111

ARSENITES AND ARSENATES - B.T.N. 28.41

Brussels Tariff Nomenclature heading 28.41 applies to arsenites and arsenates. At the public hearing on February 21, 1961, no submissions were made to the Board relating specifically to any product classified by this heading. The Industry Committee spokesman said that,

"As no one else appears to consider any product of this heading sufficiently important to warrant coming forward with a specific recommendation, the Committee recommends that all products of heading No. 28.41 be accorded duty treatment by the rates for the heading 15 p.c., B.P. and 20 p.c., M.F.N."(1)

Deloro Smelting and Refining Company Limited in a letter dated September 30, 1960 informed the Board that,

"This company has been forced to take the decision to cease operations here at Deloro. We, therefore, will not be presenting briefs asking for additional tariff protection on certain Cobalt, Arsenic and Nickel products."

At the public hearing in November, 1962, Cobalt Refinery Limited, Niagara Brand Chemicals and Chipman Chemicals Limited made submissions with respect to sodium arsenite.

Cobalt Refinery Limited, proposed rates of 15 p.c., B.P. and 25 p.c., M.F.N. for sodium arsenite. Niagara Brand Chemicals and Chipman Chemicals Limited supported these rate proposals.(2) The three companies based these proposals on their anticipation of the rates that were recommended for arsenic trioxide, the principal raw material for sodium arsenite, being adopted by the Board. The rates proposed for arsenic trioxide were also 15 p.c., B.P. and 25 p.c., M.F.N. Arsenic trioxide is discussed under heading 28.11.

Sodium arsenite is now entered under items 208t, 219a and 791.

		<u>British Preferential Tariff</u>	<u>Most Favoured- Nation Tariff</u>
208t	All chemicals and drugs, n.o.p., of a kind not produced in Canada....	Free	15 p.c.
219a	Non-alcoholic preparations or chemicals for disinfecting, or for preventing, destroying, repelling, or mitigating fungi, weeds, insects, rodents or other plant or animal pests, n.o.p.:		
	(i) When in packages not exceeding three pounds each, gross weight	Free	12½ p.c.
	(ii) Otherwise	Free	Free

(1) Transcript, Vol. 29, p. 4226

(2) Same, Vol. 109, p. 16544

	<u>British Preferential Tariff</u>	<u>Most- Favoured- Nation Tariff</u>
791 Materials of all kinds for use in producing or manufacturing preparations provided for in tariff items 209b and 219a under such regulations as the Minister may prescribe	Free	Free

The intended effect of the proposals of the three companies would be to exclude sodium arsenite from the provisions of end-use items 219a and 791 and to increase the rates from free entry under both the B.P. and M.F.N. Tariffs to 15 p.c., B.P. and 25 p.c., M.F.N.

Cobalt Refinery supported its proposal by referring to the rates that the company recommended for arsenic trioxide and added "...for adequate protection, there should be, also, a similar tariff authorized on Sodium Arsenite..."⁽¹⁾

The position of Niagara and Chipman was reflected by the following statement made in a letter dated September 10, 1962, from Niagara Brand Chemicals

"If the duty were placed on arsenic trioxide, the cost of sodium arsenite would rise directly in relationship to this duty. We feel it would be unfair to place manufacturers of sodium arsenite at a cost disadvantage through higher raw material costs with foreign producers, since sodium arsenite is presently imported into Canada duty-free, under Tariff Item 219a."

The proposals were not opposed, specifically as they relate to sodium arsenite. However, the recommendations of both the Canadian Federation of Agriculture and the National Farmers Union were strongly opposed to changes in the end-use items that were of interest to Agriculture. At the hearing on September 24, 1962, the representative of the Canadian Federation of Agriculture said that,

"The principle of end-use is an integral part of the Canadian tariff and Canadian tariff policy ... Its continuance is essential to the development of the economy and of the agricultural industry in particular ... our recommendation is that all chemicals ... used for nutritional or medicinal purposes in agriculture or in veterinary science should be accorded duty-free entry."⁽²⁾

At the same hearing the National Farmers Union referred to end-use items in the following terms:

(1) Transcript, Vol. 109, p. 16544

(2) Same, Vol. 86, p. 13026-7, 13033

"The primary principle in this respect is that chemical items which are imported for end-use as agricultural supplies should be exempt from duty. This principle of exemption ... is well established and based on sound economics ... The National Farmers Union would strongly recommend that the exemption for both current and new end-use items as they arise be maintained for components for agricultural supplies."(1)

Other Products

Certain sodium arsenates classified by heading 28.41 are entered under tariff item 210 as follows:

	<u>British Preferential Tariff</u>	<u>Most- Favoured- Nation Tariff</u>
210 (in part) ... arseniate, binarseniate, chlorate, bisulphite and stannate of soda,	Free	12½ p.c.

Other arsenates and arsenites would be entered under tariff item 208t unless qualifying for entry under end-use items such as 219a or 791.

No representations relating specifically to any of the arsenates of B.T.N. heading 28.41 were made to the Board.

The Industry Committee, consistent with other similar recommendations, proposed that those chemicals for which no other proposals were received by the Board be classified in an item worded like heading 28.41 of the B.T.N. with rates of 15 p.c., B.P. and 20 p.c., M.F.N.(2)

(1) Transcript, Vol. 86, p. 13116-7

(2) Same, Vol. 29, p. 4226

CARBONATES AND PERCARBONATES - B.T.N. 28.42INTRODUCTION

A number of carbonate compounds were considered at the public hearing of February 1961. In total, these products had a commercial value of the order of \$14 million, but only five of them were of substantial economic importance. These included sodium carbonate, anhydrous (soda ash), calcium carbonate (whiting), basic lead carbonate, barium carbonate and sodium bicarbonate. Of these, only soda ash and basic lead carbonate are made in Canada.

By far the most significant product in commerce, both in terms of domestic shipments and imports, is soda ash. It is widely used in industry particularly in the manufacture of glass and in the refining of aluminum. Many of the other products find their chief uses in paints and pigments, ceramics and brick manufacture, pharmaceutical products and toilet preparations. Barium carbonate has an important use in oil well drilling mud, and some of the compounds are used in cleaning preparations, tanning, pesticides, fire extinguishers and in household products.

A number of the compounds, most of which are imported in small quantities, represent, in total, a market of the order of a quarter of a million dollars. Many of the imported compounds were represented as being of too little commercial significance to warrant their manufacture in Canada, and no company came forward to express a specific interest in them.

The sections which follow deal principally with the products which were the subject of submissions before the Board. They are presented approximately in the order of their commercial importance.

SODIUM CARBONATE, ANHYDROUSThe Product and the Industry

Sodium carbonate, anhydrous, or soda ash, is a white, powdered or granular material valued mainly for the sodium oxide which it supplies to various manufacturing processes. The chemical is usually produced commercially either by the ammonia-soda process or the natural brine (trona) process, although other methods are also used to produce relatively small amounts. In Canada, soda ash is produced for sale by Brunner Mond Canada Limited, at Amherstburg, Ontario, a wholly owned subsidiary of Allied Chemical Canada Limited; small amounts are also produced captively by Dow Chemical of Canada Limited.

In the northern part of the U.S.A., the U.K., and in Canada, the ammonia-soda process is used to manufacture soda ash. In the south and southwest U.S.A. where large trona (sodium sesquicarbonate) deposits are located this is the major raw material for the production of sodium carbonate.

The principal raw materials for the ammonia-soda process are salt, limestone and coke. Brunner Mond was established at Amherstburg in 1918 because of the natural advantages of a location which had both salt and limestone in abundance. The plant has its own docks nearby for unloading coke from the U.S.A. whence it is imported free of duty.

In the ammonia-soda process calcium chloride is produced in a fixed ratio to sodium carbonate. Until 1935, Brunner Mond did not recover any of the calcium chloride from the effluent and even in recent years not all of the effluent has been treated to recover the product.

Brunner Mond enlarged its plant several times over the years and in 1957 increased its capacity by 50 per cent. In 1962 the capacity was reported to be about 286,000 tons of sodium carbonate annually.(1) At the public hearing, in 1961, the company spokesman claimed that the plant had sufficient capacity to supply the whole Canadian market.(2) At that time imports were about 10 per cent of the estimated consumption and the company spokesman said that the plant was operating at full capacity, twelve months of the year.(3) In November of 1963 trade sources reported that Brunner Mond was adding a further 35,000 to 50,000 tons of capacity,(4) which would increase its capacity to between 320,000 and 335,000 tons annually.

The Market

The available information indicates that the Canadian market has expanded from about 300,000 tons of sodium carbonate, annually, in 1959 with an estimated value of more than \$9 million to nearly 400,000 tons in 1964, valued at around \$13 million. The market is concentrated largely in Ontario and Quebec, particularly near the large metropolitan centres of Montreal and Toronto and was said to have had "a healthy growth trend". This is borne out by the successive expansions of plant and the market estimate above, which suggests an increase of about 40 per cent in the past five years.

The principal use of soda ash is in the manufacture of glass. According to the Brunner Mond spokesman, more than a third of Canadian consumption is for this purpose. The product also has important uses in refining minerals, in the production of industrial chemicals and in the manufacture of pulp and paper. The company's estimate of Canadian consumption, by use, is shown on the following page. The available data indicate that the "other" uses are in the manufacture of soaps and cleaning compounds, explosives, petroleum products, and other products.

(1) U.S. Dept. of the Interior, Minerals Yearbook 1962

(2) Transcript, Vol. 30, p. 4382

(3) Same, Vol. 30, p. 4400

(4) Oil Paint and Drug Reporter, Nov. 4, 1963, p. 27

Percentage Distribution of Consumption of Soda Ash,
by Industry, 1960

	<u>Per Cent of Total</u>
Glass	38
Mining and Smelting	26
Heavy Chemicals	17
Pulp and Paper	12
Other	<u>7</u>
	100

Source: Transcript, Vol. 30, p. 4381

At the time of the hearing, in 1961, imports constituted a small proportion of Canadian supplies. At that time, the Brunner Mond spokesman informed the Board that slightly more than 90 per cent of the Canadian market was supplied by the company.⁽¹⁾ In the early fifties, imports began to increase rapidly. By 1955 and 1956 they substantially exceeded 100,000 tons annually and were probably approaching 50 per cent of the estimated Canadian supply at that time. Brunner Mond increased its plant capacity by 50 per cent in 1957, with a resulting decline in imports from 135,000 tons in 1956 to 34,000 tons in 1958 and to 25,000 in 1962. Imports increased again in 1963, to 53,000 tons and in 1964, to 121,000 tons with almost all imports being from the U.S.A.

Imports of Soda Ash or Barilla, by Country of Origin,
Selected Years, 1948 - 64

	<u>U.K.</u>		<u>U.S.A.</u>		<u>Total</u>	
	'000 tons	\$ '000	'000 tons	\$ '000	'000 tons	\$ '000
1948	7	294	24	654	31	948
1952	7	190	28	711	36	901
1954	46	1,196	48	1,321	94	2,517
1956	30	841	105	3,161	135	4,002
1958	17	529	17	532	34	1,061
1961	6	178	20	669	26	847
1962	3	75	22	775	25	850
1963	3	92	49	1,630	53	1,722
1964(a)	*	11	120	3,880	121	3,891

(a) Includes sal soda which in 1963 was valued at \$11,000

Source: D.B.S., Trade of Canada, Imports, s.c. 8345

At the public hearing the Brunner Mond spokesman said:

"we are not able to serve the west coast markets at this time economically nor are we able to serve the eastern coastal markets. These markets are not large."⁽²⁾

⁽¹⁾ Transcript, Vol. 30, p. 4398

⁽²⁾ Same, Vol. 30, p. 4396

This limitation results from the cost of transportation to these markets. Data on imports by province of entry bear out the statement that these markets are small. About two thirds or more of the imports are ordinarily entered in Quebec and Ontario; in most of this region Brunner Mond has freight cost advantages relative to producers in the U.S.A. Quebec is the principal province of entry for imports from Britain with small quantities also being entered in the Atlantic Provinces and British Columbia. Imports from the U.S.A. are entered in Ontario, and to a much lesser extent into the Prairies and British Columbia.

Brunner Mond's spokesman estimated that about 60 per cent of imports are entitled to 99 per cent drawback of duty.⁽¹⁾ Presumably these are principally the imports to which the Alcan spokesman referred in the following quotations:

"The table [of imports] given by Allied Chemicals would lead one to believe that there was a lot of imported material competing for their domestic markets, whereas in fact most of the U.K. imports were made by ourselves for reasons explained in our brief. A portion of the U.S. imports were made for the same reason..."⁽²⁾

He amplified this later, saying:

"Soda ash is one of the most important materials used in the production of aluminum and is consumed in large tonnage... Because soda ash plays so important a part in our operations, we dare not depend on a single source of supply. Discontinuity of supply for even a short period brought on by either labour disputes, transportation difficulties or other reasons could curtail our operations and seriously affect our position as an exporter of aluminum. For these reasons we purchase part of our requirement in Canada, and from the United Kingdom and the United States."⁽³⁾

Imports of Soda Ash, by Region of Entry,
1961 - 63

	1961		1962		1963	
	tons	\$ '000	tons	\$ '000	tons	\$ '000
Atlantic Prov.	415	13	299	14	415	20
Quebec	8,447	236	5,395	149	7,221	192
Ontario	8,240	284	11,032	399	36,591	1,204
Prairie Prov.	5,062	161	2,989	103	3,364	120
British Columbia	<u>4,327</u>	<u>152</u>	<u>5,064</u>	<u>186</u>	<u>4,984</u>	<u>185</u>
Canada	26,491	847	24,779	850	52,575	1,722

Source: Dominion Bureau of Statistics, s.c. 8345

⁽¹⁾ Transcript, Vol. 30, p. 4400

⁽²⁾ Same, Vol. 30, p. 4408

⁽³⁾ Same, Vol. 30, p. 4415

The discussion at the hearing suggests that a large proportion of the imports that were entered in Ontario and Quebec, and some that were entered in British Columbia result from Alcan's reluctance to depend on only one supplier. Alcan's imports appear to be between 10,000 and 20,000 tons annually, although in 1957, when Brunner Mond was in the course of expanding its plant, Alcan imported 62,000 tons⁽¹⁾ of the total importations in that year of 91,000 tons.

No data are available on exports but they were said to be negligible. Brunner Mond's location places the plant at a disadvantage in relation to freight costs, for exports to the U.S.A. Some United States plants are more favourably situated in relation to U.S. consumers near the Canadian border.

In Canada soda ash is sold f.o.b. Amherstburg either in bulk or in 100 pound bags. The company spokesman said that freight allowances are sometimes given but indicated that this was rare. In the U.S.A. sales are priced f.o.b. plant, freight equalized. Imports from the U.S.A. were said to be mainly in bulk; all imports from the U.K. were in 100 pound bags.

Prices of Soda Ash, Canada and the U.S.A.
Per Ton, Bulk, Carloads, f.o.b. Works

	<u>Light, 58%</u>		<u>Dense, 58%</u>	
	<u>Canada</u>	<u>U.S.A.</u> (a)	<u>Canada</u>	<u>U.S.A.</u> (a)
	\$Can.	\$U.S.	\$Can.	\$U.S.
1959	36.00	31.00	38.00	32.00
1960	36.00	31.00	38.00	32.00
1961	36.00	31.00	38.00	32.00
1962	36.00	31.00	38.00	32.00
1963	36.00	31.00	38.00	32.00
1964	36.00	31.00	38.00	32.00
1965	36.00	31.00	38.00	32.00

(a) U.S. prices are freight equalized and are average of annual high and low

Source: Canadian Chemical Processing and Oil, Paint and Drug Reporter

Prices both in Canada and in the U.S.A. have been unchanged for several years. Canadian prices have been \$5 or \$6 higher than in the U.S.A. during this period. The difference is approximately equal to the M.F.N. duty of 25 cents per 100 pounds.

Tariff Considerations

Sodium carbonate, anhydrous is entered under item 210b, "Barilla or soda ash", at 15 cents per 100 pounds, B.P. and 25 cents per 100 pounds, M.F.N. (Barilla is an archaic term applied to sodium carbonate produced from sea plants.) At the recent published price in the U.S.A. of \$1.55 per hundredweight (light, bulk, in carloads), the M.F.N. duty is equivalent to 16 p.c.; on the basis of the average value of imports from the U.K., the B.P. duty would seem to be equivalent to about 10 p.c.

In the B.T.N. sodium carbonate is classified under heading 28.42, "Carbonates and percarbonates". Heading 28.42 excludes natural sodium carbonate. However, this exclusion would not apply to sodium carbonate made from the natural brine, trona, by chemical processes involving recrystallization.

At the public hearing, on February 22, 1961, Brunner Mond proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N. (1)

Aluminum Company of Canada, Limited recommended free entry of the product under both the B.P. and M.F.N. Tariffs when it is used for the production of aluminum. (2)

The Plywood Manufacturers Association of British Columbia proposed that sodium carbonate should be free of duty when imported for use in the manufacture of plywood. (3)

In a brief to the Board the Canadian Pulp and Paper Association stated:

"we must strongly oppose any revision [of the Canadian Customs Tariff] which would result in an increase over current tariff rates...in respect of chemicals used by the pulp and paper industry." (4)

The Association listed sodium carbonate as one of the chemicals which the industry used in substantial amounts.

Polymer Corporation also indicated its interest in the product. The company urged that no change be made in end-use item 851, under which the Corporation imported, free of duty, materials for use in the manufacture of synthetic rubber.

Consolidated Mining and Smelting Company of Canada Limited informed the Board that it used sodium carbonate in its chemical and metallurgical operations and urged that there be no increase in the rates of duty for chemicals used by Canadian manufacturers. (5)

(1) Transcript, Vol. 30, p. 4398

(2) Same, Vol. 30, p. 4413

(3) Same, Vol. 30, p. 4425

(4) Same, Vol. 85, p. 13006

(5) Same, Vol. 5, p. 715

Electric Reduction Company of Canada Limited proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., for anhydrous sodium carbonate.(1) The company listed the product as one which it used in its processes of manufacture.

The Canadian Pharmaceutical Manufacturers Association listed anhydrous sodium carbonate as one of the more important chemicals used by its members and proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., for chemicals which are made in Canada and are used in the manufacture of pharmaceuticals.(2)

In a letter to the Board dated April 26, 1957, Wyandotte Chemicals Corporation, of Wyandotte, Michigan, urged "that the tariff be lowered or eliminated in order to provide a competitive market for soda ash".

In support of its proposed rates, the Brunner Mond spokesman said that the small size of the Canadian market prevented establishment of a plant of optimum size and that his company's costs were 20 per cent higher than those of plants in the U.S.A., near the Canadian border. He also said that the plant had had to be located near sources of raw materials and this placed it relatively far from consumers. He claimed that the company was unable to compete in British Columbia and in at least part of the Prairie region and suggested that there had been a gradual erosion of the protection offered by the specific rates of duty.

Apart from these general statements of disability the company did not indicate why the rates which were proposed were considered to be appropriate and in particular, why an increase in the B.P. rate was thought to be necessary.

The Brunner Mond plant was established at Amherstburg towards the end of World War I because of the advantages of having salt and limestone, the two principal raw materials, on the site. The location also gives ready access to coke, the other major raw material. Although the capacity of the plant is smaller than that of many establishments in the U.S.A., it is larger than some ammonia-soda plants and has been expanded substantially on several occasions. The expansion in 1957 was of the order of 50 per cent and the expansion reported to have been undertaken in 1964 would add an additional 15 per cent. At the time of the hearing the company was supplying more than 90 per cent of the Canadian market at list prices which, in effect, were the U.S. prices plus duty.

Two thirds of the imports at that time were being entered not because the company was not competitive, but because of Alcan's fear of reliance on one supplier for a major and essential raw material. The Aluminum Company of Canada Limited spokesman said that about 85 per cent of the company's production was exported and that imported soda ash was used in the production of aluminum for export. As a result the company was entitled to drawback of duty on their imports. He said that:

(1) Transcript, Vol. 4, p. 680

(2) Same, Vol. 87, p. 13321

"Discontinuity of supply for even a short period...could curtail our operations and seriously affect our position as an exporter of aluminum..."

"An increase in the duty of soda ash could raise our costs to the extent it might jeopardize our position in an increasingly competitive market both at home and abroad..."

"For the reasons given above, any duty on soda ash is detrimental to us as one of Canada's largest exporters."(1)

Under questioning he indicated that Alcan purchased in both the U.K. and the U.S.A. so as not to be dependent on a single supplier. He also said that if there were more Canadian suppliers that the company would purchase from them.

The spokesman for the Plywood Manufacturers Association of British Columbia said,

"our industry is unable to absorb an increase in manufacturing costs and we therefore wish to record...our strong opposition...that rates of duty on sodium hydroxide and sodium carbonate be increased over their current levels... we believe that they should receive similar treatment to that accorded to the principal ingredient in the plywood glue mix, namely phenolic formaldehyde resin and be subject to a complete 'end use' exemption similar to that provided for that resin by item 925 when it is imported for use in the manufacture of plywood."(2)

An additional reason for a large part of the imports is suggested by the import statistics. Brunner Mond increased its plant capacity in 1957 after imports had risen to 135,000 tons in 1956, valued at more than \$4 million. Thereafter imports declined to a low of 25,000 tons, valued at less than one million dollars by 1962. Imports again increased rapidly in 1963 and 1964 and in the latter year were 121,000 tons, valued at nearly \$4 million. Late in 1963 Brunner-Mond was reported to be undertaking a substantial increase in capacity. The above suggests that a large part of the increased imports in the past have stemmed from a shortage of Canadian supplies. It should be noted that the company's current expansion would increase its capacity by only about 50,000 tons whereas imports, in 1964, were more than double this amount. Unless the Canadian demand declines very substantially it seems reasonable to assume that imports will continue to be large and might very well increase further as Canadian consumption grows.

(1) Transcript, Vol. 30, p. 4415

(2) Same, Vol. 30, p. 4425

CALCIUM CARBONATEThe Product

Calcium carbonate occurs widely in natural forms such as chalk, limestone and marble. These may be ground, washed, or otherwise treated by mechanical means to produce such products as gilders' whiting, Paris white, and ground chalk. In addition, calcium carbonate can be produced chemically in purer forms with different physical characteristics as precipitated calcium carbonate, precipitated chalk or whiting.

The Canadian Minerals Yearbook 1963 reports:

"Canada has suitable occurrences of most types of limestone in many of its populated regions, particularly in the southern parts of Ontario and Quebec, where about 85 per cent of the limestone is quarried and consumed. This rock, which is of good quality, is quarried chiefly in or near the cities of these two provinces...

"Owing to its physical property, abundance, and low value, limestone is generally the preferred type of stone for most uses. Distance to markets is usually the greatest factor in determining the extent of use of a particular limestone. Other criteria include chemical composition, accessibility, texture, hardness and color, as well as thickness and extent of formation.

"The main uses for limestone are in construction, cement and lime production, chemical manufacture and agriculture...

"In Canada, more than three quarters of the limestone production is used by the construction industry...Except in the production of cement and lime, the physical properties of limestone are the most important for construction purposes. The cement industry consumes calcium and high-calcium limestone that contains minor amounts of magnesia. In lime production, both calcium and dolomitic limestone are used as raw materials...

"In the chemical and metallurgical industries, mainly high-calcium limestone is desired, although the dolomitic type is used to an appreciable extent. Most goes into the production of lime for chemical purposes. High-calcium limestone serves as a flux in smelting ferrous and non-ferrous ores and in the preparation of bisulphite liquor and lime for processing paper pulp. It is also a raw material in the production of glass and other ceramic products and serves as a filler in paint, linoleum, rubber, plastics, paper, gypsum, asbestos and asphalt products. Dolomitic limestone is used in smelting ferrous ores, in processing paper pulp, and in the production of glass. It is a source of magnesium metal which is produced by Dominion Magnesium Limited near Haley, Ontario. Steetley of Canada Limited deadburns dolomitic limestone near Dundas, Ontario, for use as a refractory in open-hearth and

electric furnaces. Brucitic limestone is quarried and processed into magnesia and lime by Aluminum Company of Canada, Limited near Wakefield, Quebec. The magnesia is consumed for refractory, chemical and agricultural purposes. Brucitic limestone is also a raw material in the processing of paper pulp.

"The agriculture industry requires large quantities of limestone to control soil acidity and as a source of calcium, magnesium and other elements. The rock is also used in manufactured fertilizers and in stock and poultry feed. It is pulverized or finely crushed for these applications. Marl is also used to control soil acidity."

Precipitated calcium carbonate is produced by the treatment of solutions of calcium salts with carbon dioxide. This form of the product was not produced in Canada at the time of the public hearing on September 21, 1961,⁽¹⁾ and, as far as is known, was not being produced in 1964.

Distinctions in the form of the product are recognized in the Canadian Customs Tariff and affect the tariff items under which it is entered and, therefore, the extent to which Reference 120 relates to the product.

The mineral forms of calcium carbonate are entered principally under item 296 (chalk), item 296f ("limestone, not further processed than crushed or screened"); item 240 ("whiting or whitening; Paris white and gilders' whiting;") and under an extract of item 711 ("marble, crushed and ground, including marble dust"). Some may also be entered under other extracts of item 711 in such forms as dolomite, a carbonate of calcium and magnesium. Natural forms suitable for structural or sculptural uses may be entered under such items as 305a, 305c, 306c, 306d and 307.

The forms which are entered under item 711 or extracts of item 711 are here all considered to be mineral forms, and hence item 711 is not considered to apply to forms within Reference 120. Items 296 and 296f, as well as those items which classify forms of calcium carbonate valued for aesthetic reasons, were not referred to the Board and, therefore, are also outside the terms of Reference 120.

However, the terms "whiting" and "whitening" which are used in tariff item 240 are sometimes applied to chemically prepared forms of calcium carbonate although they are more generally used to designate mechanically purified natural forms.⁽²⁾ In addition, the pharmaceutical grades of calcium carbonate are entered under tariff item 208t as chemicals or drugs of a kind not produced in Canada. The chemically prepared forms of item 240 and those entered under item 208t are within the terms of the Reference.

(1) Transcript, Vol. 29, p. 4301, 4305

(2) Same, Vol. 29, p. 4295-6

In the Brussels Tariff Nomenclature only chemically precipitated calcium carbonate is included in heading 28.42; natural calcium carbonate, which may be purified by such mechanical processes as washing and grinding, is excluded even though it may be of a very high purity. This form is classified mainly under B.T.N. heading 25.08.

The problem of distinguishing the forms of the product which are in Reference 120 is carried over into the proposals which were made to the Board. This difficulty is discussed more fully under Tariff Considerations. In brief, an item consistent with heading 28.42 of the Brussels Tariff Nomenclature would contain only the precipitated forms of calcium carbonate. This classification is narrower than the terms of the Reference which include the various forms of whiting under item 240, not all of which are precipitated.

The Market

The Canadian Minerals Yearbook 1963 estimates the Canadian market for limestone, in 1962, at about 42 million tons, valued at more than 50 million dollars. Most of this demand was for crude mineral forms which are not part of this Reference. They are used mainly for such purposes as roads, concrete aggregates, application to soil, and metallurgical refining. About half the tonnage was for roads and the four applications combined accounted for about 85 per cent of the tonnage and more than 75 per cent of the value. Canada's foreign trade in limestone is substantial, but relatively small compared with production. The low unit value of this material and its wide distribution in nature make transportation an important factor in its distribution. As a result, Canada's trade in limestone is largely with the U.S.A. In 1963 Canada exported about 634,000 tons of crushed limestone, valued at almost one million dollars and imported nearly 700,000 tons valued at about \$1.5 million.

Consumption of Limestone, by Major Use, 1961 and 1962

	<u>1961</u>		<u>1962</u>	
	'000 tons	\$'000	'000 tons	\$'000
Road metal	19,740	21,037	20,317	22,102
Concrete aggregate	9,310	10,277	10,841	11,691
Metallurgical	1,913	2,081	1,378	1,646
Agricultural	1,234	3,262	1,192	3,202
Rubble and riprap	1,091	1,233	1,281	1,062
Railroad ballast	573	633	972	1,009
Pulp and Paper	612	1,645	452	1,395
Other chemical uses	275	278	519	559
Other uses	<u>3,472</u>	<u>7,514</u>	<u>4,672</u>	<u>8,358</u>
	38,220	47,960	41,623	51,023

Source: Canadian Minerals Yearbook 1963

The market for the precipitated calcium carbonate, and the other forms which are within the terms of Reference 120, is supplied by imports and appears to be less than \$300,000 annually, a very small fraction of the market value of the crude forms of the product. The available data do not show precipitated calcium carbonate separately, but the import statistics indicate a total use in Canada, of the forms which are within the terms of the Reference (including the precipitated form), of from 8,000 to 10,000 tons annually. Statements made at the public hearing in 1961 suggest that the paint and varnish industry is by far the largest consumer of the precipitated form. This industry also appears to be the largest user of all refined forms.

Consumption of Whiting, Chalk and Precipitated
Calcium Carbonate, 1960 and 1961

	1960			1961		
	tons	\$ '000	\$/ton	tons	\$ '000	\$/ton
Paints and Varnishes	16,240	669	41.19	16,148	670	41.49
Rubber Goods	8,953	261	29.15	9,761	304	31.14
Miscellaneous						
Chemicals	868	75	86.41	1,102	86	78.04
Medicinal &						
Pharmaceutical	152	15	98.68	166	16	96.39
Toilet Preparations	<u>105</u>	<u>12</u>	<u>114.29</u>	<u>108</u>	<u>17</u>	<u>157.41</u>
Total of above	26,318	1,032	39.21	27,285	1,093	40.06

Source: Dominion Bureau of Statistics, Various Publications

The average values which are given in the above table indicate that they relate to a very pure product. The spokesman for the rubber goods industry informed the Board that between 80 and 90 per cent of the calcium carbonate used by the rubber industry was of natural forms.⁽¹⁾ This would account for the low average value of this industry's purchases relative to the other industries listed in the table. The prices which are given below tend to confirm this view.

Prices of Calcium Carbonate in the U.S.A.,
in Bags, Carload Lots, at Works, 1961

	<u>\$U.S. per ton</u>
Natural, dry-ground, air floated 325 mesh	10.50
" , chalk, whiting, 325 mesh	32.00
" , water-ground, 10 to 20 microns	17.00
Precipitated, dense	30.00
" , medium	38.00
" , surface treated	42.00
" , ultrafine	117.50

Source: Oil, Paint and Drug Reporter

⁽¹⁾ Transcript, Vol. 29, p. 4315

Imports, described in the statistics as "whiting, gilders' whiting and Paris white", have been 3,000 to 10,000 tons a year, with an annual value between \$230,000 and \$350,000. In terms of quantity, about one half to two thirds is from the U.S.A. and the remainder from the United Kingdom and France. The value data suggest that, in the main, the imports from the U.S.A. were of the precipitated form, while those from the U.K. and France were forms of the natural product.

Imports of Whiting, Gilders' Whiting and Paris White,
by Country of Origin, Selected Years, 1953 - 64

	<u>France</u>	<u>U.K.</u>	<u>U.S.A.</u>	<u>Total</u>	
		- tons -		tons	dollars
1953	1,193	4,292	6,605	12,247	284,229
1956	2,626	3,176	5,543	11,356	275,914
1959	2,664	3,134	4,524	10,322	273,698
1960	1,995	2,629	4,210	8,835	250,507
1961	1,846	2,613	3,949	8,408	233,363
1962	1,535	2,265	4,242	8,142	259,258
1963	1,568	2,354	5,861	9,789	360,070
1964	1,143	1,454	6,044	8,641	270,322

Source: D.B.S., Trade of Canada, Imports, s.c. 7269

Tariff Considerations

Calcium carbonate, exclusive of 'aesthetic' forms is entered under items 208t, 240, 296, 296f and an extract of 711. It is also specified in end-use item 875a. The rates of duty for these items are shown below.

<u>Item No.</u>	<u>B.P.</u>	<u>M.F.N.</u>
208t	Free	15 p.c.
240 (whiting)	Free	10 p.c.
296 (ground chalk)*	Free	Free
296f (crushed limestone)*	Free	Free
711 Ex. (crushed and ground marble)*	Free	Free
875a (calcium carbonate for antibiotics)	Free	Free

* Not in Reference 120

In the B.T.N., calcium carbonate, the chemical, is made by a process of chemical precipitation and, although the resulting product is normally very pure, the B.T.N. does not specify any degree of purity. In the administration of the Canadian Customs Tariff, precipitated calcium carbonate may be entered under item 208t if it meets the specifications of certain pharmacopoeiae and under item 240 if of a lesser purity. However, tariff item 240 relates to "whiting or whitening", "gilders' whiting" and "Paris white", terms which are more

usually used to describe natural forms of calcium carbonate. Therefore the scope of existing item 240 exceeds that of B.T.N. heading 28.42, which pertains only to the precipitated form. The natural forms which are classified under tariff item 240 would probably be under heading 25.08 of the B.T.N.

The crude natural forms that are entered under items 296, 296f and the extract of item 711 relating to crushed and ground marble, would probably be classified, in the B.T.N., under headings 25.08, 25.17 and 25.21.

Consolidated Mining and Smelting Company Limited (Cominco), urged that free entry should be continued for the crushed limestone under item 296f.⁽¹⁾

The Canadian Federation of Agriculture expressed an interest in calcium carbonate as a constituent of fertilizers, feeding stuffs and pesticides. The Federation requested no change in the existing tariffs on materials used as fertilizers or in the manufacture of fertilizers and free entry under all Tariffs for materials used in feeding stuffs or pesticides.⁽²⁾

The material that is used as a fertilizer or in fertilizers is ordinarily crushed or ground limestone and would usually be entered under items 240 or 663b, free of duty under all Tariffs. The material that is used in animal feeds and pesticides would be of a higher purity and might include both the more highly refined natural product and the precipitated form. These might be entered under items 208t, 240 or 296, or under end-use items relating to animal feeds and pesticides.

The Canadian Pulp and Paper Association reported the interest of its members in calcium carbonate, limestone and calcite, and strongly opposed any increase in rates of duty for chemicals used by that industry.⁽³⁾

Limestone and calcite are naturally-occurring forms of calcium carbonate which would probably be entered under tariff items 296 or 296f as ground chalk or crushed limestone. The Association did not indicate whether its interest in calcium carbonate was in the refined natural form or in the precipitated form, but it is probable that imports of both kinds, of the purity used by the industry, would be classified under tariff item 240.

The Rubber Association of Canada expressed an interest in both the natural and precipitated forms of calcium carbonate. The spokesman for the Association said that about 80 to 90 per cent of the use by the rubber industry was of the natural forms. He urged continued free entry for the crude natural forms and added:

(1) Transcript, Vol. 29, p. 4277

(2) Same, Vol. 83, p. 12813; Vol. 78, p. 11925; Vol. 110, p. 16631

(3) Same, Vol. 85, p. 13006

"As to the chemically produced, naturally we wouldn't be happy to have any increase in duty, nobody is on a product he uses, but we wouldn't express any strenuous objections to the proposal by the chemical industry."⁽¹⁾

The available information suggests that most of the use of the natural forms by the Rubber Association, would probably be entered under tariff items 296 and 240 and that the precipitated form would also be entered under item 240.

The Canadian Color Makers Association expressed its interest in precipitated calcium carbonate. The Association's spokesman proposed an end-use item worded as follows:

"The following products of Chapter 28 [of the B.T.N.], when not made in Canada, and for use in the manufacture of synthetic coloured pigments of headings 32.05A, 32.06, 32.07 and 32.09, B.P. 0% - M.F.N. 0%."

Calcium carbonate was one of nine chemicals in the list that followed.⁽²⁾

He also agreed that when the product is made in Canada the rates should be 15 p.c., B.P. and 20 p.c., M.F.N.⁽³⁾

The Canadian Paint Varnish and Lacquer Association's (CPVLA) submission for the hearing on B.T.N. 28.42 also related to precipitated calcium carbonate which its members imported under item 240. It proposed free entry for the product until it is made in Canada in an item worded like heading 28.42 of the B.T.N. When the product is made in Canada, the Association supported rates of 15 p.c., B.P. and 20 p.c., M.F.N.⁽⁴⁾

The Canadian Pharmaceutical Manufacturers Association expressed its interest in calcium carbonate as one of the less important chemicals used by its members. The Association proposed rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for chemicals used in the manufacture of pharmaceuticals. When such chemicals were ruled to be made in Canada the Association supported rates of 15 p.c., B.P. and 20 p.c., M.F.N.⁽⁵⁾ For pharmaceutical use a very pure product would be used which would probably be classified under tariff item 208t.

No other representations were made to the Board relating specifically to calcium carbonate.

Some of the proposals listed above related to the crude natural forms of calcium carbonate which might be entered under tariff items 296, 296f and an extract of item 711, free of duty under both the B.P. and M.F.N. Tariffs. All of the proposals which would relate

⁽¹⁾ Transcript, Vol. 29, p. 4316-7

⁽²⁾ Same, Vol. 20, p. 2982, 2985

⁽³⁾ Same, Vol. 29, p. 4287

⁽⁴⁾ Same, Vol. 29, p. 4302-3

⁽⁵⁾ Same, Vol. 87, p. 13321

to these items were for continued free entry. However, all of these items are outside the terms of Reference 120 and the Board is not making any recommendation with respect to them.

A second group of proposals related to either natural or precipitated calcium carbonate which would be entered generally under tariff item 240, at rates of Free, B.P. and 10 p.c., M.F.N. These included representations by the Pulp and Paper Association, the Rubber Association and the Paint and Varnish Association, all of which urged free entry or low rates of duty for the product which their members used. This view was not opposed. Because item 240 is in Reference 120, these products are part of the Reference regardless of their classification under the B.T.N.

A third group of representations related to either natural or precipitated calcium carbonate which might be entered under tariff items 208t, 240 or various end-use items. These representations urged the continuation, or the creation of appropriate end-use items, with generally either free entry or low rates of duty when they are for use in the manufacture of particular products. Such proposals were made by the Canadian Federation of Agriculture, the Color Makers Association and the Pharmaceutical Manufacturers.

Thus, for the calcium carbonate that is within the terms of Reference 120, the proposals to the Board were either for free entry or low rates of duty under both the B.P. and M.F.N. Tariffs, either in appropriately worded items or in end-use items. The forms of calcium carbonate which were involved were either the fairly pure natural grades or the chemically-precipitated grades, none of which is known to be available from Canadian production.

In general, those who urged free entry or low rates of duty supported their proposals on the grounds that a duty on the product which they used would increase their costs of production. Some also stated that there were no substitutes for the form of calcium carbonate which they used, and therefore that they would continue to use the imported product even if it were dutiable at a higher rate.

Although there was general agreement regarding the rates which should apply while the product was not produced in Canada, some of the proposals were for rates of 15 p.c., B.P. and 20 p.c., M.F.N., when the product was ruled to be made in Canada. Such a qualification was made by the Color Makers, the Paint and Varnish Association and the Pharmaceutical Manufacturers. None of their spokesmen indicated why these rates would be appropriate at that time.

Some of the interests represented at the hearing, for example the Color Makers and the Paint and Varnish Association, requested that the appropriate wording of a tariff item for calcium carbonate would be that of heading 28.42 of the B.T.N. If such a wording were used it would apply to the precipitated product which is now entered mainly under tariff item 240; it would also apply to the much smaller quantities which are entered under tariff item 208t. However, such an item would not apply to the relatively pure grades of natural calcium carbonate which are now entered under item 240 as "whiting or whitening; Paris white and gilders' whiting".

BASIC LEAD CARBONATE

Basic lead carbonate is a finely ground, insoluble, white powder, which is also known as white lead, dry white lead and dry white lead carbonate. It is manufactured in Canada from either lead oxide or lead metal by the action of acetic acid and carbon dioxide gas. Basic lead carbonate is about 86 per cent lead oxide, by weight. It is available commercially as the dry product or ground in oil.

It is produced in Canada by Carter White Lead Company of Canada Limited and McArthur, Irwin Limited. The head offices and plants of both companies are located in Montreal. At the public hearing, on February 21, 1961, their spokesman said:

"with the low tonnage of this product it almost economically is necessary that it be produced in conjunction with allied industries, and in the case of ourselves [Carter White Lead] we produce lead oxide, and McArthur, Irwin, in addition to lead oxides, produces dry colours as well."⁽¹⁾

Basic lead carbonate is used to impart adhesion, toughness and durability to paints and as a stabilizer in plastics. Small amounts are also used by the ceramics and other industries. A spokesman for the producers estimated that about 90 per cent of Canadian consumption was by the paint industry. This would indicate a market in Canada for between 600 and 700 tons annually, with a value of about \$200,000 to \$270,000 (including lead carbonate ground in oil). Most of the market was said to be in Ontario and Quebec.

The market for lead carbonate declined for many years as a result of the substitution of titanium dioxide, a much more effective pigment. For example, in 1948 the paint industry used about 2,400 tons of dry white lead and about 8,400 tons of titanium dioxide; in 1958 the industry used about 700 tons of dry white lead and nearly 20,000 tons of titanium dioxide. It should be noted that in this period titanium dioxide was displacing other materials besides white lead. Since the mid-fifties Canadian consumption of dry white lead has continued to decline, although at a slower rate. In 1962 the paint industry consumed only 465 tons of the product.

Imports were said to have been an insignificant part of Canadian supplies⁽²⁾ and the producers stated "our share of the market has remained fairly stable and static over quite a number of years now."⁽³⁾ Exports have varied from less than 10 tons in some years to almost 1,100 tons in 1960. Export statistics are not available after 1960, but in the latest three years available, 1958-60, exports increased sharply and in 1959 and 1960 exceeded the estimated Canadian consumption by substantial amounts. Almost all exports have been to the U.S.A.

⁽¹⁾ Transcript, Vol. 29, p. 4326

⁽²⁾ Same, Vol. 29, p. 4334

⁽³⁾ Same, Vol. 29, p. 4329

In Canada basic lead carbonate is sold f.o.b. Montreal; in the U.S.A. it is sold on a delivered basis. The price in Canada was said to be closely related to the price of lead. Except for the relatively small variations in price which accompanied changing costs of lead, the price in Canada had been stable for some years.

The spokesman for the manufacturers said:

"Actually there has been very little in the way of...import competition due to the fact that the American prices have always been considerably higher than the Canadian price, plus the duty, and that excluded them from this market pretty well."(1)

In 1961, at the time of the hearing, the price, delivered from the U.S.A. to Montreal, was said to be \$18 per 100 pounds and with the 20 p.c. duty the laid-down cost would be \$21.60 a hundredweight. The United States supplier would absorb the freight of \$1.25 in this instance. The comparable Canadian price, f.o.b. Montreal, was \$15.95 per 100 pounds.

Prices in the U.K. were considerably lower and the manufacturers informed the Board that the U.K. supplied Canadian consumers on the eastern and western seaboard. At the time of the hearing the U.K. domestic price was \$13.88 per hundredweight, ocean freight was 90 cents and the 15 p.c. duty amounted to \$2.08, making the laid-down cost at Montreal \$16.86 per 100 pounds.

Tariff Considerations

Basic lead carbonate is entered under item 243.

<u>Item 243</u>	<u>British Preferential Tariff</u>	<u>Most- Favoured- Nation Tariff</u>
Dry white lead.....	15 p.c.	20 p.c.

At the time of the hearing it was also entered under end-use item 921 which deals with materials of a kind not produced in Canada for use in the manufacture of various plastics. However, it has since been ruled to be of a kind made in Canada and now is entered only under item 243.

Carter White Lead Company of Canada Limited and McArthur, Irwin Limited jointly proposed that the existing rates under item 243 should "be maintained on dry basic lead carbonate of B.N. chapter 28.42 and that basic lead carbonate be excluded from the provisions of tariff item 921."(2) This proposal was supported with some qualifications by the Canadian Paint Varnish and Lacquer Association. The Association's

(1) Transcript Vol. 29, p. 4337

(2) Same, Vol. 29, p. 4319

spokesman said "...this doesn't seem to be an unreasonable duty and therefore we would not change it." He qualified his proposal by indicating that he hoped "...the paint product made from carbonates and other products would also have the same level of...reasonable duty protection." (1)

The Associated Lead Manufacturers Limited of London, England and The Pigment and Chemical Company Limited, of Montreal, Quebec, proposed "that the B.P. rate be fixed at zero per cent on a permanent basis." (2) No rate was recommended by these interests for entry under the M.F.N. Tariff.

The Industry Committee spokesman indicated that he was opposed to free entry on a permanent basis for any product, including basic lead carbonate. (3)

The proposals of Carter White Lead, McArthur, Irwin and the paint manufacturers would not change the existing rates. The proposal of the Associated Lead Manufacturers and The Pigment and Chemical Company would reduce the rate under the B.P. Tariff from the present 15 p.c. to zero.

In support of their recommended rates, the two Canadian manufacturers said that the cost of lead constituted approximately 80 per cent of the total cost of producing basic lead carbonate, (4) and that Canadian consumers paid about 20 per cent more for pig lead than their counterparts in the U.K. (5) They also claimed that they were at a disadvantage because of higher production costs and the smaller market.

At the hearing on lead oxide, to which reference was made, the discussion indicated that imports of lead oxide were largely to coastal areas or to parts of the Prairie Provinces. Freight costs were cited as the principal reason for these imports. (6) However, most of the market for lead oxide was in Ontario and Quebec and the Canadian producers supplied more than 90 per cent of the Canadian market for lead oxide. (7) Moreover, at the hearing on lead carbonate the manufacturers said that imports of the carbonate were insignificant. Canadian exports had been substantial in some years and in 1959 and 1960 they exceeded domestic consumption by substantial amounts. Of course, export sales would have had to have been competitive in world markets.

The paint industry spokesman gave no indication why the rates he proposed were appropriate. His position was that it was desirable to protect domestic manufacturers and that he hoped that comparable levels of protection would be extended to the paints in which basic lead carbonate was used.

The brief of the Associated Lead Manufacturers and The Pigment and Chemical Company submitted:

(1) Transcript, Vol. 29, p. 4344-5

(2) Same, Vol. 29, p. 4342

(3) Same, Vol. 29, p. 4347

(4) Same, Vol. 29, p. 4339

(5) Same, Vol. 29, p. 4324

(6) Same, Vol. 18, p. 2614

(7) Same, Vol. 18, p. 2619-20

"that the availability of the material from the U.K. is of advantage to Canadian manufacturers giving an alternative source of supply, whilst at the same time the two Canadian manufacturers of this material are protected by the fact that the U.K. is not a low wage area, and by the anti-dumping provision of the Canadian tariff. Material from the U.K. is bought by users in Newfoundland and the west coast provinces because the cost of freights to these areas by sea from the United Kingdom is lower than the rail freights from the Canadian sources of supply."(1)

BARIUM CARBONATE

Barium carbonate occurs in an impure form as the mineral witherite. It is also produced chemically in purities exceeding 98 per cent. The precipitated chemical forms are obtained from barytes, a naturally-occurring form of barium sulphate.

In Canada, barium carbonate is used mainly in the brick industry to prevent white deposits from appearing on the surface of bricks, and in oil well drilling, as a component of drilling muds. These two uses were said to account for about 80 per cent of total Canadian consumption. The discussion at the hearing indicated that there are no suitable substitutes for the product in the manufacture of bricks.

Barium carbonate is not produced in Canada, and imports supply the total market requirement. At the public hearing, on February 21, 1961, it was estimated that the brick industry used about 2,000 tons a year.(2) The Canadian Petroleum Association has reported that about 600 tons are used annually in oil well drilling.(3) Imports of the product, in 1961, were valued at \$325,000. In 1964, imports of 4,341 tons valued at \$392,000, were reported. Imports of barium carbonate come mostly from the U.K. and West Germany,(4) but some are also imported from the United States and France. Western Germany supplied 93 per cent of Canadian supplies in 1964.

Tariff Considerations

Barium carbonate, when precipitated, is entered under tariff item 208t, Free, B.P. and 15 p.c., M.F.N., and under end-use item 848b, Free under both the B.P. and M.F.N. Tariffs when for use in drilling mud. This item is not in Reference 120. At the public hearing in February 1961, Diamond Clay Products Limited proposed rates of Free, B.P. and 15 p.c., M.F.N. until the product is made in Canada, in an item worded like heading 28.42 of the Brussels Tariff Nomenclature. When it is made in Canada rates of 15 p.c., B.P. and 20 p.c., M.F.N. would apply.(5) This proposal was supported by Canada Brick, a

(1) Transcript, Vol. 29, p. 4342

(2) Same, Vol. 29, p. 4240

(3) Report by the Tariff Board, Reference 130, Vol. 1, p. 45

(4) Transcript, Vol. 29, p. 4248

(5) Same, Vol. 29, p. 4246

division of Canadian Marietta of Ontario Limited, Medicine Hat Brick and Tile Company Limited, Alberta Clay Products, Redcliff Pressed Brick Company, Redcliff Premier Brick Company and Northwest Ceramics.(1)

Laporte Chemicals Limited also proposed rates of Free, B.P. and 15 p.c., M.F.N. for such an item.(2) However, Laporte made it clear that its proposal was not conditional on the product not being made in Canada.

The Canadian Pulp and Paper Association expressed an interest in the product and strongly opposed any change in rates of duty for chemicals used by its members.(3)

The Canadian Pharmaceutical Manufacturers Association also indicated its interest in barium carbonate as a minor chemical used by its members. The Association urged rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for chemicals which were not made in Canada and were used in the manufacture of pharmaceuticals.(4)

The Diamond Clay spokesman stated that barium carbonate was not produced in Canada and that the Canadian market was too small to make production feasible in the near future. He also said that there was no satisfactory commercial substitute in manufacturing bricks. In view of the foregoing he urged that "there is no reason at the present time or in the foreseeable future for altering the existing rate."(5)

In support of its proposal, Laporte stated that increased duties would only result in increased costs to important Canadian industries. The spokesman for the company also urged that the existing preferential margin should be retained.

No other representations were made to the Board with respect to barium carbonate.

The effect of the proposals would be to include barium carbonate in a new item worded like heading 28.42 of the B.T.N., "carbonates and percarbonates, including commercial ammonium carbonate containing ammonium carbamate".

There was agreement on rates of Free, B.P. and 15 p.c., M.F.N., until barium carbonate is made in Canada, the existing rates under item 208t. When it is made in Canada the brick manufacturers proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N. to apply.

The brick manufacturers did not give any reasons why such rates would be appropriate when the product is made in Canada. The spokesman for the group, in explanation of this proposal stated:

(1) Transcript, Vol. 29, p. 4256-7

(2) Same, Vol. 29, p. 4269

(3) Same, Vol. 85, p. 13006

(4) Same, Vol. 87, p. 13321

(5) Same, Vol. 29, p. 4246

"This means...that we are not looking for trouble; that we are willing to go along with the Chemical Industry..."(1)

At the hearing, the question arose as to whether natural forms of barium carbonate (witherite) might be confused with the chemical forms which are now entered under item 208t, and would be classified under heading 28.42. The available information indicates that witherite is now entered under item 711 and would continue to be entered under this item.

SODIUM BICARBONATE

Sodium bicarbonate, or baking soda, is a white crystalline powder. It is an essential ingredient of baking powder and its major use is in baking. It is also used in dry-type fire extinguishers, in tanning, in various food uses, and in effervescing "health salts" and pharmaceuticals.

Sodium bicarbonate is not made in Canada and was said not to be competitive with any chemical made in Canada. It is imported from the U.S.A. and the U.K., the former supplying about three quarters of the Canadian demand. Canadian consumption has been increasing slowly and in 1964 was about 9,813 tons valued at \$530,000. Complete statistics on use by various industries are not available. However, the principal uses appear to be bakery goods, chemicals and leather tanning. The available data suggest that two thirds of the total is for baking.

Sodium bicarbonate is now entered under tariff item 207, Free, B.P. and 12 $\frac{1}{2}$ p.c., M.F.N. At the public hearing, on February 22, 1961, Church and Dwight Limited, Montreal, Quebec, urged that

"Until such time as sodium bicarbonate is made in Canada,... that present rates of duty...be not increased..."

The company spokesman added:

"As an importer, we would of course benefit from any reduction in the existing 12 $\frac{1}{2}$ per cent M.F.N. rate...as we could then make our product available to our customers at a lower price."(2)

Church and Dwight imports its supplies from the parent company in the U.S.A. The company did not indicate what rates it would recommend when the product was made in Canada.

In support of the proposal the company spokesman said:

(1) Transcript, Vol. 29, p. 4246

(2) Same, Vol. 30, p. 4355

"The existing Canadian consumption...is not great enough to support a production operation in Canada. However, the raw materials are available in this country, and with growth in the size of the market, production in Canada would become practical. Under these circumstances we do not propose unqualified free entry, which would discourage the start of manufacture in this country."(1)

Imperial Chemical Industries Limited of Britain proposed maintenance of the existing rates of Free, B.P. and 12½ p.c., M.F.N., until such time as the product is made in Canada in substantial quantities in relation to demand. When it is made in Canada, in such quantities, the rates proposed were 15 p.c., B.P. and 20 p.c., M.F.N.(2) The spokesman for I.C.I. did not indicate why these rates might be appropriate for sodium bicarbonate.

The Tanners Association of Canada urged that "...until sodium bicarbonate is made in Canada, it be allowed free entry..." The Association's brief said the tanning industry faces severe competition both in the domestic and in foreign markets and therefore that

"production costs are of vital importance...The free entry of sodium bicarbonate...would assist low cost production thereby promoting the ability of this secondary industry to retain its domestic market and to expand its exports."(3)

The Association's brief did not indicate what rates would be appropriate when the product was made in Canada.

In a letter dated August 3, 1960, Polymer Corporation indicated its interest in sodium bicarbonate in an end-use item worded like item 851, providing duty-free entry for materials used in the manufacture of synthetic rubber.

The Canadian Pharmaceutical Manufacturers Association indicated that sodium bicarbonate was one of the more important chemicals used by its members. It proposed rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for chemicals which were not made in Canada and were imported for use in the manufacture of pharmaceuticals.(4) The spokesman for the Association did not indicate why these rates were appropriate specifically for sodium bicarbonate.

(1) Transcript, Vol. 30, p. 4354-5
 (2) Same, Vol. 30, p. 4365, 4370, 4374
 (3) Same, Vol. 30, p. 4361
 (4) Same, Vol. 87, p. 13321

SODIUM SESQUICARBONATE

Sodium sesquicarbonate is a white, crystalline material which is not made in Canada. Its major use is as a cleaning agent and it is an important ingredient of certain dry-mixed cleaning products which are sold for cleaning floors and walls. It is also used to neutralize the acidity in cream used for butter-making and in other minor applications.

At the public hearing, in February 1961, The Procter and Gamble Company of Canada Limited informed the Board that it was the largest consumer of the product in Canada and that, in its use of the product, in cleaning compounds, no other chemical was a suitable substitute.⁽¹⁾ The Diversey Corporation (Canada) Limited, a distributor of the chemical for neutralization of cream, also claimed that there was no suitable alternative for that purpose.⁽²⁾

The spokesman for Procter and Gamble said, "We doubt that it will be made in the foreseeable future due to market limitations."⁽³⁾ He added, later, "...I don't wish to release any confidential information as to what we consider to be the minimum sized plant, but I would say at the present we are a considerable distance from it..."⁽⁴⁾

In 1959, the value of imports of sodium sesquicarbonate was \$190,000. The Procter and Gamble spokesman estimated that this represented about nine million pounds of product. Almost all imports were from the U.S.A., but small amounts were also imported from the U.K. The two principal suppliers, in the U.S.A., were said to be located at Painesville, Ohio and Solvay, New York. In 1964, imports were 10.8 million pounds valued at \$241,000.

In the U.S.A., sodium sesquicarbonate is sold in 100 pound bags, f.o.b. works. The price was stable, at \$2.35 per 100 pound bag, in carloads or truckloads, from 1955 until early in 1964, when it declined to \$2.10 per 100 pounds. At the hearing there was some discussion of developing trucks and railway cars for less costly transport of the product in bulk.

Tariff Considerations

Sodium sesquicarbonate is imported under tariff item 208t, Free, B.P. and 15 p.c., M.F.N. The Procter and Gamble Company of Canada Limited, the major importer of the product, proposed free entry under both the B.P. and M.F.N. Tariffs until the product was ruled as made in Canada. When it is made in Canada, the company proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., in a tariff item worded like heading 28.42 of the Brussels Tariff Nomenclature.⁽⁵⁾

⁽¹⁾ Transcript, Vol. 30, p. 4451

⁽²⁾ Same, Vol. 30, p. 4442

⁽³⁾ Same, Vol. 30, p. 4454

⁽⁴⁾ Same, Vol. 30, p. 4456

⁽⁵⁾ Same, Vol. 30, p. 4455

Diversey Corporation (Canada) Limited urged that the Board adopt the B.T.N. and also recommended free entry under the B.P. and M.F.N. Tariffs while the product is not made in Canada, "with provision, in the event that an adequate Canadian supply be established, the rate of duty be increased when a made-in-Canada ruling is granted." (1) The company did not specify what rates should apply when ruled to be produced in Canada.

Imperial Chemicals Industries which supplied only small amounts to the Canadian market, disagreed that there should be no tariff preference while the product was not made in Canada. The company spokesman said:

"...it is very possible that we shall be offering to a wider circle of customers in Canada than we have for many years,...the absence of a need for preference does not imply that that is a constant situation. The products sometimes become made in countries where they were not made before,...and it seems not inconsistent with a stand that preference should continue to be granted — it doesn't seem inconsistent with that proposition to suggest that maybe there might be provision that preference should be re-instated, shall we say, if and when supplies become available from the preferential area." (2)

However, he did not specify the margin of preference that he deemed appropriate, nor did he indicate the rates that should apply when the product was made in Canada. However, his comments suggested that the existing rates under item 208t be continued.

The effect of the proposals by Procter and Gamble and Diversey would be to decrease the M.F.N. rate from the existing 15 p.c. to free entry until the product was made in Canada. The proposal by I.C.I. would presumably leave the existing rates unchanged.

The major argument made by Diversey in support of free entry was outlined by its spokesman as follows:

"While we hold that reasonable tariff protection should be granted to chemical products manufactured in Canada, the Canadian consumer should be allowed to obtain products, which do not compete with products of Canadian manufacture at as low a cost as possible." (3)

He added, later, that Diversey Corporation "feels that the chemical industry in Canada is in no way aided or strengthened by a duty on this product." (4)

The Diversey spokesman took the position that "reasonable" tariff protection should be granted to manufacturers in an economy that was passing through a transition from:

(1) Transcript, Vol. 30, p. 4443

(2) Same, Vol. 30, p. 4449

(3) Same, Vol. 30, p. 4440

(4) Same, Vol. 30, p. 4441

"dealing only in extractive products to the more complex economy with its costly manufacturing plants, more specialized skills, more highly trained professional personnel and with its higher standard of living."(1)

The Procter and Gamble spokesman made a similar argument in the following terms:

"Sodium sesquicarbonate is not now made in Canada. We doubt that it will be made in the foreseeable future due to market limitations. Suitable alternatives are not now made in Canada. For these reasons, and since the imposition of duties would not serve to protect any segment of the Canadian economy, we respectfully recommend that the rates of duty on sodium sesquicarbonate should be zero per cent British Preferential and zero per cent Most-Favoured-Nation."(2)

The Procter and Gamble spokesman did not indicate why he believed rates of 15 p.c., B.P. and 20 p.c., M.F.N. would be appropriate when the product was made in Canada.

SODIUM CARBONATE, MONOHYDRATE

Sodium carbonate, monohydrate is a form of sodium carbonate which contains one molecule of water of crystallization. This chemical has an attractive, crystalline appearance and is used mainly in the production of toilet preparations, particularly bath crystals. The monohydrate is not made in Canada and is imported from the U.S.A. and the U.K. The available data suggest an annual value of imports at the time of the hearing, of about \$18,000 of which two thirds to three quarters originate in the U.S.A.

The product is entered under tariff item 208t, Free, B.P. and 15 p.c., M.F.N. Imperial Chemicals Industries proposed retention of existing rates "believing that this will not be harmful in any way to Canadian producers of other varieties of sodium carbonate", (3) until it is made in Canada. At that time, rates of 15 p.c., B.P. and 20 p.c., M.F.N. would apply. (4) The spokesman for I.C.I. did not indicate why rates of 15 p.c. and 20 p.c. would be appropriate when the product was made in Canada.

No other proposals were made to the Board related specifically to sodium carbonate, monohydrate.

(1) Transcript, Vol. 30, p. 4438-9

(2) Same, Vol. 30, p. 4455

(3) Same, Vol. 30, p. 4366

(4) Same, Vol. 30, p. 4370, 4374

LITHIUM CARBONATE

Lithium carbonate "is used as a starting point in the production of other lithium chemicals and also in industry, particularly in ceramics...Other applications include welding, fluxing, high-temperature lubricants with hot-working metals."(1) It is not made in Canada and the available data indicate that annual imports at the time of the hearing, were valued at approximately \$30,000. The discussion at the public hearing in February 1961, suggested that most imports were from the U.K. and the U.S.A.

Lithium carbonate is entered under tariff item 208t, Free, B.P. and 15 p.c., M.F.N. Associated Lead Manufacturers of London, England and The Pigment and Chemical Company of Montreal, Quebec, proposed that these rates be made permanent and not be conditional on the chemical not being manufactured in Canada. Their joint brief stated that:

"it is of advantage to the Canadian using industries to have an alternative source of supply even if and when this material is manufactured in Canada."(2)

In a brief, dated December 13, 1960 Pfizer Canada also proposed rates of Free, B.P. and 15 p.c., M.F.N., but only while the chemical was not made in Canada. Pfizer's spokesman said that lithium products were of strategic importance during wars and that one of the company's divisions in the U.K., Kemball, Bishop and Company Limited, was the sole producer in the Commonwealth. For this reason he felt that the existing preferential rate should be maintained for British material.(3)

The Foote Mineral Company proposed free entry under both B.P. and M.F.N. Tariffs, until the product is made in Canada. When it is made in Canada the rates would be 15 p.c., B.P. and 20 p.c., M.F.N., in an item worded as is heading 28.42 of the B.T.N.(4) Foote Mineral Company did not indicate why these rates would be appropriate.

The Canadian Pharmaceutical Manufacturers Association listed lithium carbonate as a minor chemical used by its members. It proposed that chemicals which were not made in Canada should be dutiable at rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, when they are imported for use in the manufacture of pharmaceuticals.(5) The spokesman for the Association did not indicate why these rates were appropriate specifically for lithium carbonate.

No other representations were made to the Board related specifically to lithium carbonate.

(1) Transcript, Vol. 29, p. 4346

(2) Same, Vol. 29, p. 4347

(3) Same, Vol. 19, p. 2786; Vol. 29, p. 4349

(4) Same, Vol. 29, p. 4348

(5) Same, Vol. 87, p. 13321

COBALT CARBONATE

At the hearing in February 1961, Mallinckrodt Chemical Works Limited indicated its interest in cobalt carbonate and proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N. The product is now entered at rates of Free, B.P. and 15 p.c., M.F.N. under tariff item 208t and free of duty under both Tariffs under item 219h when entered for use in the manufacture of animal or poultry feeds. According to the company, its "principal and only use of consequence is in the formulation of animal feeds, to supply essential cobalt element".(1)

The Company's brief referred to their submission on February 7, 1961, and said that everything that was then said regarding cobalt sulphate should be applied to cobalt carbonate. In that brief the company claimed that its costs of cobalt raw materials were higher than those of their foreign competitors and that their biggest problem was in finding supplies of the principal raw material, cobalt oxide. The brief also stated that the company had been unsuccessful in locating an alternative source of cobalt oxide after Deloro Refining Company had ceased operations in 1960. However, at the time of the hearing on cobalt carbonate, Cobalt Refinery Limited had begun to make cobalt oxide and therefore, the material has again become available to Mallinckrodt. The company spokesman said that Mallinckrodt was the only Canadian producer of cobalt carbonate and that he had been offered cobalt salts, by U.K. producers, at laid-down costs which were below the "bare cost of the raw materials to make them".(2)

The Canadian Federation of Agriculture indicated its interest in cobalt carbonate as a constituent of animal feeds. The Federation urged that chemicals used as additives for animal feeds should be entered free of duty under all Tariffs.(3)

BISMUTH CARBONATE

Mallinckrodt Chemical Works Limited, in a letter to the Board, wrote that a previous submission on basic bismuth nitrate (subnitrate) should apply to basic bismuth carbonate (subcarbonate). Mallinckrodt appears to have been the only producer of the chemical in Canada. The product is used mainly in "pharmaceutical preparations for the alleviation of gastric and intestinal conditions in both medical and veterinary areas. Other uses would not account for one per cent of consumption".(4)

The company stated that it was at a disadvantage in the manufacture of bismuth salts because the Canadian market was not sufficiently large to permit efficient production and that it was handicapped by having to pay more than its competitors for bismuth, the principal raw material.(5) However, this appears to have been an

(1) Transcript, Vol. 29, p. 4317

(2) Same, Vol. 25, p. 3773

(3) Same, Vol. 78, p. 11925

(4) Same, Vol. 29, p. 4275

(5) Same, Vol. 27, p. 3984-5

historical situation and by the time of the hearing on heading 28.42, Mallinckrodt could obtain bismuth metal at a lower price than could its major competitors in the U.K. It also appeared that, even if the company could capture all of the Canadian market for bismuth salts, this would not be sufficient to permit any appreciable increase in the scale of production or any appreciable change in its costs.⁽¹⁾

The company requested rates on bismuth subcarbonate of 15 p.c., B.P., and 20 p.c., M.F.N.⁽²⁾ The product is now entered under tariff item 711, at these rates. Except for the reference to the hearing on bismuth subnitrate the company did not submit any additional support for its rate proposals for bismuth subcarbonate specifically. If the same circumstances applied to both the subcarbonate and the subnitrate it would appear that the company's principal opportunity for increasing its sales would have to come from export sales on a substantial scale.

The Canadian Pharmaceutical Manufacturers Association proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., for chemicals used in the manufacture of pharmaceuticals. It listed bismuth carbonate as one of the more important chemicals used by its members.⁽³⁾ The spokesman for the Association did not indicate why these rates would be appropriate specifically for the product.

No other representations were made to the Board related specifically to bismuth carbonate.

OTHER CARBONATES AND PERCARBONATES

At the beginning of the hearing on heading 28.42 of the B.T.N. (carbonates and percarbonates) the spokesman for the Industry Committee stated:

"The Committee believes that all commercially significant products of heading No. 28.42 are dealt with in briefs which the Board has received for this hearing. While some other products had been previously reported, these do not have sufficient commercial importance for any company to come forward at this time with recommendations. In these circumstances, the Committee recommends that such other products be accorded the tariff treatment provided for heading No. 28.42."⁽⁴⁾

In other submissions to the Board the Industry Committee proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., for those products for which other recommendations were not made to the Board.

The Canadian Pharmaceutical Manufacturers Association submitted two lists of chemicals in which its members had an interest.

(1) Transcript, Vol. 27, p. 3990 et seq.

(2) Same, Vol. 29, p. 4275

(3) Same, Vol. 87, p. 13321

(4) Same, Vol. 29, p. 4229

The first list showed all chemicals which members had mentioned; the second listed the more important chemicals used by them.⁽¹⁾ The first list included six carbonates or percarbonates that have not been dealt with separately, and which were not included in the second list; hence they were of relatively small economic significance to the membership. They included: ammonium carbonate, ammonium hydrogen carbonate, ferrous carbonate, manganese carbonate and potassium hydrogen carbonate. The second list included magnesium carbonate and potassium carbonate.

The Association requested that:

"the following statement be inscribed at the beginning of each B.T.N. chapter affected:-

'Chemicals included in this chapter, not "Made in Canada" to be used for the manufacture of Pharmaceutical products shall enter at rates of 0% and 15% unless otherwise provided for. Chemicals "Made in Canada" shall carry the heading rates of 15 p.c., B.P. and 20 p.c., M.F.N.'"⁽²⁾

The Canadian Federation of Agriculture expressed an interest in three carbonates which are not dealt with separately, basic copper carbonate and ferrous carbonate, both of which are used in feeding stuffs, and potassium carbonate as a constituent of fertilizers. The Federation urged that chemicals which entered either into the manufacture of feeding stuffs or fertilizers, should be free of duty under all Tariffs.⁽³⁾

Consolidated Mining and Smelting Company of Canada Limited (Cominco) informed the Board of its interest in potassium carbonate which the company produces captively. Cominco urged that the rates of duty on chemicals should not be increased, in order to avoid increasing costs of Canadian manufacturers and also to avoid the possibility of retaliatory action by other countries.⁽⁴⁾

The investigations of the Board indicated that most of the carbonates that were not dealt with separately were not produced in Canada and were imported in relatively small amounts. The value of imports for each product generally varied from less than \$1,000 to about \$20,000 annually. Statistical evidence of imports was found for the following carbonates: ammonium carbonate, ammonium bicarbonate, copper carbonate, ferrous carbonate, manganese carbonate, nickel carbonate, potassium carbonate, sodium carbonate, decahydrate, and zinc carbonate. The Board understands that sodium carbonate, decahydrate (washing soda) is made in Canada, but no representations were made concerning it. The investigation tended to support the Industry Committee's statement that "all commercially significant products of heading 28.42 are dealt with in briefs which the Board has received..."

(1) Transcript, Vol. 87, p. 13277

(2) Same, Vol. 87, p. 13321

(3) Same, Vol. 78, p. 11925; Vol. 83, p. 12813

(4) Same, Vol. 5, p. 715

In general the products would be entered under item 208t, Free, B.P. and 15 p.c., M.F.N. when not made in Canada and under item 711 at 15 p.c., B.P. and 20 p.c., M.F.N., when ruled to be produced in Canada. As long as the products were of a purity and were manufactured in such a way that the Department of National Revenue would rule them to be chemicals, there would not likely be any conflict between their classification in the Canadian Customs Tariff and the Brussels Tariff Nomenclature. However, a detailed study of each individual chemical would be required to determine whether the problems of classification encountered with products such as calcium carbonate were also present in respect of this unspecified group of carbonates and percarbonates.

In commenting on heading 28.42 the spokesman for the Industry Committee said:

"Because ammonium carbonate in a pure state is not encountered in commerce, heading 28.42 specifically refers to the product known as ammonium carbonate. This is a chemical compound containing ammonium hydrogen carbonate (NH_4HCO_3) and ammonium carbamate ($\text{NH}_2\text{COONH}_4$)."(1)

CYANIDES AND COMPLEX CYANIDES - B.T.N. 28.43INTRODUCTION

The consumption of cyanides of B.T.N. heading 28.43 has an estimated value, in Canada, of about \$4 million to \$5 million, annually. Two chemicals of the group are of substantial economic significance, calcium cyanide and sodium cyanide; both are produced in Canada. The other ten chemicals on which some information is available are not known to be produced in Canada and, together, have an estimated annual market value of about \$300,000.

Calcium cyanide and sodium cyanide are enumerated in tariff item 208, which specifies free entry under the B.P. and M.F.N. Tariffs. With the exception of a proposal by the Canadian Pharmaceutical Manufacturers Association, continued free entry was proposed for these chemicals. Most of the other chemicals of heading 28.43, for which interests were made known to the Board, are entered under tariff item 208t, at rates of Free, B.P. and 15 p.c., M.F.N. For these chemicals the proposals were generally for continuation of the existing rates.

Calcium cyanide and sodium cyanide, together, account for more than 90 per cent of the total commercial trade in cyanides; they are substitutable for each other in the applications which account for most of their use. They are therefore dealt with together in the discussion which follows.

The Industry Committee informed the Board that to its knowledge all commercially important products of the heading were the subject of various proposals. The Committee recommended rates of 15 p.c., B.P. and 20 p.c., M.F.N., to apply to all chemicals of the heading for which no other proposals were made to the Board, in an item worded like heading 28.43 of the B.T.N.⁽¹⁾

CALCIUM CYANIDE AND SODIUM CYANIDE

Calcium cyanide, in a relatively pure form, is a white or greyish powder. The article of commerce is usually between 40 and 50 per cent pure. It is dark grey or black in colour and is commonly known as "black cyanide". Sodium cyanide is a white powder whose commercial form is generally between 95 and 98 per cent pure; it is frequently designated as "white cyanide". Both products are very poisonous and must be handled with great care.

Calcium cyanide has been produced in Canada by one company, Cyanamid of Canada Limited (Cyanamid), at Niagara Falls, Ontario, for many years. Sodium cyanide is also produced by only one company, Shawinigan Chemicals Company Limited, at Shawinigan, Quebec. The latter company began production, in volume, in the fall of 1960.

(1) Transcript, Vol. 30, p. 4461

The principal use of both chemicals, in Canada, is in the extraction of gold and silver from ores. They are also used for electroplating, the manufacture of chemicals, casehardening metals and in pesticides. In their main applications, extraction of gold and electroplating, the principal value of both chemicals is in their cyanide content. White cyanide (sodium cyanide) in the anhydrous form that enters commerce contains about twice as much cyanide as the usual commercial form of "black cyanide". Both are sold on the basis of their cyanide content and for calcium cyanide the cyanide content is expressed in terms of sodium cyanide equivalence.

The Canadian market, in 1959, for calcium and sodium cyanide combined was estimated to be equivalent to about 14,000,000 pounds of sodium cyanide.⁽¹⁾ The Canadian demand was said to have been supplied partly by 10,000,000 pounds of black cyanide (equivalent to approximately 5,000,000 pounds of sodium cyanide) sold by Cyanamid, and imports of 9,300,000 pounds of sodium cyanide valued at \$1.2 million. The total value of sales in Canada, in 1959, is estimated to have been about \$1.5 million. The spokesman for Shawinigan Chemicals said that about 11,000,000 pounds were used in the mining industry and about 3,000,000 pounds for other applications. The black cyanide would be used only for mineral extraction.

Since 1959, there has been some decline in Canadian production of gold and silver, suggesting a decline in the use of calcium and sodium cyanide. However, it is probable that total current use in Canada is not much different from that in 1959.

The available data indicate that, in 1959 and 1960, black cyanide provided about one-third of the cyanide used in Canada and imports of sodium cyanide, the remaining two-thirds. The spokesman for Cyanamid said imports of black cyanide were negligible.⁽²⁾ Faith, Keyes and Clark report that practically all of the black cyanide used in the U.S.A. is imported from Canada.⁽³⁾

Imports of sodium cyanide have been relatively stable for several years, varying between about 8 million and 9 million pounds annually, with a value of \$1.0 million to \$1.2 million. More than three-quarters of the imports are ordinarily from Britain.

As the article in "Industrial Chemicals" indicates, Canada is a substantial exporter of black cyanide. At the public hearing, the spokesman for Cyanamid reported that in 1960 his company sold a total of about 62 million pounds of the product of which 45 million pounds, almost three-quarters of the total, were exported. Exports to the U.S.A. were 41.4 million pounds and to other countries, 3.6 million pounds. Only 17 million pounds were sold in Canada. U.S. import data indicate that exports to that country, in 1960, would be valued at about \$2 million.

(1) Transcript, Vol. 30, p. 4505

(2) Same, Vol. 30, p. 4483

(3) Faith, Keyes and Clark, Industrial Chemicals, 1957, p. 455

Imports of Sodium Cyanide, by Country of Origin,
Selected Years, 1953-64

	<u>U.K.</u>	<u>Western Germany</u> thousand pounds	<u>U.S.A.</u>	<u>Other</u>	<u>Total</u>	
					'000 lb.	\$'000
1953	6,356	755	126	1,087	8,324	1,011
1955	7,547	1,314	107	83	9,056	1,142
1957	6,765	1,264	203	53	8,285	1,066
1959	7,134	1,775	284	67	9,260	1,235
1961	6,942	989	261	646	8,838	1,200
1962	7,582	1,026	229	177	9,014	1,217
1963	6,558	1,241	338	352	8,489	1,177
1964	5,455	1,457	364	371	7,648	1,049

Source: D.B.S., Trade of Canada Imports, s.c. 8354

The spokesman for Shawinigan Chemicals said his company had developed a new and more economic process for producing sodium cyanide. He said the company expected to capture a large part of the Canadian market for both white and black cyanide and that, in 1961, Shawinigan was already exporting some of its sodium cyanide to the U.S.A. The Shawinigan plant was closed by a strike from August 1962 until early in 1963 and this may explain why no appreciable decline in the volume of imports is reported in those years. However, in 1964 imports of sodium cyanide were 7.6 million pounds, 14 per cent less than in 1961. Imports in 1964 were valued at one million dollars.

Sodium cyanide is imported either as a powder or as compressed blocks or briquettes. When Shawinigan began production it produced only a solution containing 30 to 40 per cent sodium cyanide. The company has since installed drying equipment and is selling sodium cyanide both as a solution and in the anhydrous form. The spokesman for Shawinigan said that although it was more costly to ship the solution there were economies associated with its use that tended to offset the additional freight charges within a distance of about 500 miles from the plant.

Canadian prices of black and white cyanide are not published. In the U.S.A., sodium cyanide in briquettes or in the granular form has been priced at approximately 18.3 cents a pound, f.o.b. works, since 1961. Canadian imports from the U.S.A. varied between about 17 and 18 cents a pound until 1962. In 1963 imports from the U.S.A. averaged 18.8 cents a pound and in 1964, 20.4 cents a pound. Imports from Britain had an average value of 13.2 to 13.6 cents a pound during the same period. U.S. imports from Canada had an average value varying from 4.8 cents to 6.6 cents a pound between 1958 and 1964. Although U.S. trade statistics list these as "sodium cyanide", their volume since 1961 and the fact that the product was not made in Canada in volume before 1961, suggest that these imports were actually of calcium cyanide.

Tariff Considerations

Calcium and sodium cyanide are enumerated in tariff item 208 and enter free of duty under all Tariffs.

At the public hearing, in February 1961, Cyanamid of Canada Limited proposed continuation of the existing free entry for calcium cyanide.⁽¹⁾

The Canadian Federation of Agriculture expressed an interest in calcium cyanide as a chemical used in the manufacture of pesticides. The Federation urged free entry for such chemicals under both the B.P. and M.F.N. Tariffs.⁽²⁾

Shawinigan Chemicals Limited proposed free entry for sodium cyanide under both the B.P. and M.F.N. Tariffs. The company spokesman referred to the tariff of 15 p.c. proposed for the European Common Market and urged that, if it became possible, for example, by way of trade agreements, the rates on imports from these countries should be different from those that apply to imports from the U.S.A. The company recommended a rate of 20 p.c. for imports from Common Market countries.⁽³⁾

Imperial Chemical Industries Limited, the principal external supplier of sodium cyanide to the Canadian market, also urged continuation of the existing free entry for the chemical.⁽⁴⁾ Although its submission was qualified to apply only until the product was ruled to be made in Canada, the company did not indicate what rates might be applied when the product was ruled to be made in Canada.

Naugatuck Chemicals listed sodium cyanide as a chemical used in its manufacturing processes. The company informed the Board that it did not oppose the rates proposed by Canadian producers of chemicals that it used.⁽⁵⁾

The Consolidated Mining and Smelting Company of Canada Limited expressed its interest as a consumer of sodium cyanide and urged that there be no increase in the rates of duty for chemicals used in Canadian industry.⁽⁶⁾

The Canadian Pharmaceutical Manufacturers Association listed sodium cyanide as a relatively unimportant chemical used by its members. It recommended rates of 15 p.c., B.P. and 20 p.c., M.F.N., for all chemicals made in Canada and used in the manufacture of pharmaceuticals.⁽⁷⁾

Thus, except for the proposal of the pharmaceutical manufacturers, all parties who indicated their interest in calcium and sodium cyanide recommended free entry for these chemicals under both the B.P. and M.F.N. Tariffs.

(1) Transcript, Vol. 30, p. 4484

(2) Same, Vol. 110, p. 16631

(3) Same, Vol. 30, p. 4509

(4) Same, Vol. 30, p. 4494

(5) Same, Vol. 6, p. 902

(6) Same, Vol. 5, p. 715

(7) Same, Vol. 87, p. 13321

Cyanamid of Canada, the only Canadian producer of calcium cyanide, sells about three-quarters of its output in the U.S.A. According to the company's brief these exports are entered into the U.S.A. free of duty.

Shawinigan Chemicals, the only Canadian producer of sodium cyanide, spoke in glowing terms of the new process that it had developed for the manufacture of sodium cyanide. The company spokesman informed the Board that Shawinigan expected that the advantages of its process would permit it to capture most of the Canadian market for sodium cyanide and to displace the use of calcium cyanide. At the time of the hearing the company was already exporting sodium cyanide to the north-eastern part of the U.S.A. Imports of sodium cyanide into the U.S.A. are entered free of duty.

The consumers of calcium and sodium cyanide generally supported free entry for these chemicals on the grounds of lower costs of materials used in their manufacturing processes.

COPPER CYANIDE

Both cupric cyanide and cuprous cyanide are designated by the term "copper cyanide". However, the former is an unstable form and the latter is the usual chemical entering commerce. Copper cyanide is not produced in Canada and about 80 per cent of Canadian supplies were said to be imported from Britain.⁽¹⁾ The U.S.A. and Western Germany were said to be the other suppliers of the Canadian market. In the late 1950's imports into Canada appear to have had a value of less than \$50,000 annually. The principal use of the chemical, in Canada, is in electroplating and electrodeposition of copper on other metals.

Copper cyanide is entered under tariff item 208t, at rates of Free, B.P. and 15 p.c., M.F.N.

At the public hearing, in February 1961, Imperial Chemical Industries Limited (I.C.I.), of England, urged the retention of the existing rates until the chemical was made in Canada in substantial amounts.⁽²⁾ The company did not specify the rates which should apply when so ruled. Its spokesman said he would consider a "substantial amount" to be a quantity equal to 20 or more per cent of the total use.

The I.C.I. spokesman said the Canadian market was not sufficiently large to support Canadian production of the chemical. In other submissions, the company urged maintenance of the British preference partly on the grounds that such a preference was extended to Canadian manufacturers in the British market.

⁽¹⁾ Transcript, Vol. 30, p. 4486

⁽²⁾ Same, Vol. 30, p. 4486

POTASSIUM CYANIDE

Potassium cyanide is a very poisonous chemical used almost entirely in electroplating solutions. It is a more expensive chemical than sodium cyanide, with which it competes, but its higher electrical conductivity allows a faster rate of plating and it is therefore preferred in some applications.

Potassium cyanide is not known to be made in Canada and most imports are from the U.K. and the U.S.A. At the public hearing, Imperial Chemical Industries Limited, the only British supplier, informed the Board that the Canadian market at that time was for about 150,000 pounds annually.

Although imports of potassium cyanide are combined in import statistics with those of cyanogen bromide, it would appear that most of the imports reported for the statistical class would be of potassium cyanide. Imports in 1963 were 255,000 pounds, valued at \$94,000.

Imports of Cyanide of Potassium and Cyanogen Bromide,
by Country of Origin, Selected Years, 1953-63

	<u>U.K.</u>	<u>Western Germany</u> thousand pounds	<u>U.S.A.</u>	<u>Other</u>	<u>Total</u>	
					'000 lb.	\$'000
1953	79	2	7	4	93	33
1955	115	142	27	8	291	98
1957	163	84	33	-	280	93
1959	104	5	70	-	179	59
1961	55	36	92	-	184	65
1962	164	2	94	-	260	93
1963	84	53	112	7	255	94

Source: D.B.S., Trade of Canada Imports, s.c. 8398

Potassium cyanide is enumerated in tariff item 208 and is entered free of duty under all Tariffs.

At the public hearing, in February 1961, Imperial Chemical Industries Limited (I.C.I.), proposed that free entry be continued until the product is made in Canada in substantial quantities.⁽¹⁾ Its spokesman indicated that he would define a substantial quantity to be about 20 per cent or more of Canadian use.

No other representations were made to the Board relating specifically to potassium cyanide.

⁽¹⁾ Transcript, Vol. 30, p. 4493

SODIUM FERROCYANIDE

Sodium ferrocyanide (yellow prussiate of soda) is a chemical used principally in the manufacture of such pigments as iron blue, prussian blue and milori blue. It is not known to be made in Canada. The Canadian Color Makers Association reported that its members used 380,644 pounds, valued at \$53,474, in 1958, and 426,668 pounds, valued at \$59,025, in 1959,⁽¹⁾ about two-thirds of the imports in those years of yellow and red prussiate, combined.

Canadian import statistics combine yellow (sodium ferrocyanide) and red (sodium ferricyanide) prussiate of soda in one statistical class. Combined imports of both products vary considerably from year to year. In 1964, imports of both were 937,000 pounds, valued at \$119,000. Belgium and Luxembourg and Western Germany are the principal countries of origin of the two chemicals.

Imports of Prussiate of Soda^(a), by Principal Country of
Origin, Selected Years, 1953-64

	<u>Belgium & Luxembourg</u>	<u>Western Germany</u>	<u>U.S.A.</u>	<u>Other</u>	<u>Total</u>	
		thousand pounds			'000 lb.	\$'000
1953	154	132	105	129	520	63
1955	409	278	38	45	769	86
1957	224	250	100	110	684	73
1959	362	178	49	-	588	64
1961	330	267	93	-	690	83
1962	486	253	61	40	840	105
1963	420	110	74	-	604	75
1964	490	384	63	-	937	119

(a) Includes sodium ferrocyanide (yellow prussiate) and sodium ferricyanide (red prussiate)

Source: D.B.S., Trade of Canada Imports, s.c. 8360

Sodium ferrocyanide, the yellow prussiate of soda, is entered under tariff item 210 at rates of Free, B.P. and 12½ p.c., M.F.N. This item also provides for sodium ferricyanide, the red prussiate of soda.

The Canadian Color Makers Association proposed free entry under both the B.P. and M.F.N. Tariffs in an end-use item pertaining to certain specified chemicals, including sodium ferrocyanide, "when not made in Canada, and for use in the manufacture of synthetic coloured pigments of headings 32.05A, 32.06, 32.07 and 32.09".⁽²⁾

(1) Transcript, Vol. 31, p. 4553

(2) Same, Vol. 20. p. 2984, 2985

The Industry Committee opposed free entry under an end-use item; it took the position that if the product was to be entered free of duty such tariff treatment should be extended to all uses and not restricted to only one application.⁽¹⁾

No other representations were made to the Board which related specifically to sodium ferrocyanide.

The Color Makers Association supported its rate proposal on the grounds of costs of raw materials. Its spokesman said the product was not made in Canada and was not competitive with other products made in Canada.

ZINC CYANIDE

Zinc cyanide is another of the chemicals of heading 28.43 whose use is almost entirely in electroplating and electrodeposition on other metals. It is not made in Canada; the available data suggest annual imports with values between \$35,000 and \$55,000.

Zinc cyanide is entered as an unenumerated chemical under tariff item 208t at rates of Free, B.P. and 15 p.c., M.F.N.

At the public hearing on cyanides, Imperial Chemical Industries Limited proposed the continuation of the existing rates until the product is made in Canada in substantial amounts.⁽²⁾ The company did not specify what rates would be appropriate at that time. The spokesman for I.C.I. made a joint presentation for copper and zinc cyanide. The company's position is noted above under copper cyanide.

No other representations were made to the Board which related specifically to zinc cyanide.

OTHER CYANIDES AND COMPLEX CYANIDES

A number of other chemicals of B.T.N. 28.43 were the subject of various submissions to the Board. None of these is known to be made in Canada. In general, there are no current data regarding the volume or nature of the use of these products in Canada.

Other cyanides in which an interest was expressed in the course of the hearings are listed below:

mercuric cyanide
mercuric oxycyanide
potassium ferrocyanide

⁽¹⁾ Transcript, Vol. 31, 4557

⁽²⁾ Same, Vol. 30, p. 4486

None of the above chemicals is known to be made in Canada and most would be entered at rates of Free, B.P. and 15 p.c., M.F.N., under item 208t; they were the subject of a general presentation by the Canadian Pharmaceutical Manufacturers Association. The Association reported those chemicals of B.T.N. heading 28.43 to be of relatively small economic significance to its members. It proposed, for chemicals used in the manufacture of pharmaceuticals, rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, while they are not made in Canada, and rates of 15 p.c., B.P. and 20 p.c., M.F.N. when they are ruled to be made in Canada.⁽¹⁾ The Association did not indicate why the rates proposed would be appropriate.

At the public hearing, in February 1961, there was a good deal of discussion concerning the appropriate classification, under the Brussels Nomenclature, of ferric ferrocyanide (Prussian blue) and ferrous ferricyanide (Turnbull's blue).

In the Brussels Nomenclature ferrocyanides and ferricyanides are clearly classified by heading 28.43. However, Prussian blue (Berlin blue), which consists of a ferric ferrocyanide not chemically defined, and Turnbull's blue, which consists of a ferrous ferricyanide not chemically defined, alone or in mixtures, are excluded from the heading. They are classified under heading 32.07.⁽²⁾ The products of heading 32.07 are the usual commercial forms used as colouring matter; any chemically defined products, classified by heading 28.43, are likely to be laboratory products only.

Red and yellow prussiate of potash are enumerated in tariff item 209c, duty-free, B.P. and dutiable at 15 p.c., M.F.N. These products are potassium ferricyanide and potassium ferrocyanide respectively; if chemically defined, they would be classified by heading 28.43 of the B.T.N. No representation was made on these products under this heading or with respect to colours under Chapter 32.

The Industry Committee proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., in an item worded like heading 28.43 of the B.T.N., for all products classified under the heading for which no other proposals were made to the Board.⁽³⁾ This proposal would also apply to products which were recommended for inclusion in end-use items when the products were imported for any other use. Thus the Committee's proposal would apply to the products listed by the pharmaceutical manufacturers, the sodium ferrocyanide to which the Color Makers Association's proposal was related as well as all other products which were not referred to specifically at the hearings. The Committee did not indicate why these rates would be appropriate specifically for any of the chemicals to which the proposal was intended to apply.

(1) Transcript, Vol. 87, p. 13321

(2) Explanatory Notes, Vol. 1, p. 316

(3) Transcript, Vol. 30, p. 4461

FULMINATES, CYANATES AND THIOCYANATES - B.T.N. 28.44

The fulminates, cyanates and thiocyanates of B.T.N. heading 28.44 include only two chemicals of known economic significance, mercury fulminate and potassium cyanate. The former is a highly explosive substance principally used in the manufacture of fulminating caps and detonators; the latter is used in the manufacture of selective weed killers.

Mercury fulminate is entered under tariff item 666, "Nitro-glycerine, giant powder, nitro and other explosives, n.o.p." at rates of $1\frac{3}{4}$ cents per pound, B.P. and $2\frac{1}{4}$ cents per pound, M.F.N. For general use, potassium cyanate is entered under item 208t at rates of Free, B.P. and 15 p.c., M.F.N.

The Canadian Federation of Agriculture and a group of pesticide manufacturers expressed interest in potassium cyanate as a chemical used in the manufacture of pesticides. Both proposed free entry under the B.P. and M.F.N. Tariffs for chemicals so used. The pesticides manufacturers qualified their proposal to apply only while the product was not made in Canada. When made in Canada, they supported rates of 15 p.c., B.P. and 20 p.c., M.F.N.(1)

When imported for use in the manufacture of pesticides, potassium cyanate would be entered under items 219a(1), 219a(2) or 791.

	British Preferential Tariff	Most- Favoured- Nation Tariff
<u>Item 219a (in part)</u>		
Non-alcoholic chemicals for... preventing, destroying...or mitigating ...weeds...or other plant...pests, n.o.p.:-		
(1) When in packages not exceeding three pounds each, gross weight.....	Free	$12\frac{1}{2}$ p.c.
(2) Otherwise.....	Free	Free
<u>Item 791 (in part)</u>		
Materials of all kinds for use in producing or manufacturing preparations provided for in tariff items 209b and 219a.....		
	Free	Free

The Federation supported its proposal on the grounds that a duty on products used in the manufacture of pesticides would tend to increase the costs of producing agricultural products. It referred to the highly competitive market in which agricultural produce is sold and urged that a desirable national policy would be one that assisted in keeping such costs as low as possible. The pesticides manufacturers

(1) Transcript, Vol. 110, p. 16631; Vol. 108, p. 16332-3

supported free entry while the product is not made in Canada on the grounds that they were selling manufactured pesticides in a very competitive market and that a duty would tend to increase their costs and make them less able to compete with imported pesticides.

The Canadian Pharmaceutical Manufacturers Association reported potassium thiocyanate and sodium thiocyanate to be products used by its members, though of relatively small economic significance. The Association proposed rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for chemicals which are not made in Canada and are used in the manufacture of pharmaceuticals. When products are made in Canada, the Association supported rates of 15 p.c., B.P., 20 p.c., M.F.N.

No other representations were made to the Board related to specific products of B.T.N. heading 28.44. The Industry Committee noted this and recommended that all products for which no other proposals had been made to the Board, should be dutiable at 15 p.c., B.P. and 20 p.c., M.F.N., in an item worded like heading 28.44 of the B.T.N.⁽¹⁾ This proposal would also apply to potassium cyanate when imported for use in applications other than the manufacture of pesticides. According to the spokesman for the Committee, no products of heading 28.44 are known to be made in Canada and except for the two mentioned above, none is known to be of economic significance; this situation appears to be true of the thiocyanates also which, at the time of the hearing, were not classified to this heading but to heading 28.43. The Committee did not indicate why the rates it proposed would be appropriate specifically for the products to which they were intended to apply.

(1) Transcript, Vol. 31, p. 4558

SILICATES; COMMERCIAL SODIUM
OR POTASSIUM SILICATES - B.T.N. 28.45

INTRODUCTION

Heading 28.45 of the Brussels Tariff Nomenclature relates to a large number of chemical compounds whose chemical formulae and chemical and physical properties vary. These chemicals are "the metallic salts of the various silicic acids, non-isolated in the free state and derived from silicon dioxide (heading 28.13)".⁽¹⁾ The heading excludes natural silicates such as wollastonite (calcium silicate), zircon (zirconium silicate) and natural magnesium silicates such as talc, soapstone, steatite and others.

The naturally-occurring silicates are classified in the B.T.N. under headings of Chapter 25. The treatment of these in the administration of the Canadian Customs Tariff is generally consistent with their classification in the B.T.N.; that is, the products which are classified as minerals in the B.T.N. are also regarded as such in the administration of the Canadian Customs Tariff. The natural silicates which are classified under tariff item 711, or its extracts, are regarded by the Board as being outside the terms of Reference 120 and are simply noted in this section.

Representations were made to the Board regarding basic lead silicate. The available information indicates that the product which is so designated and is of commercial importance is actually a prepared pigment. Therefore, it is discussed with other pigments of Chapter 32 of the B.T.N.

In total, the silicates of this heading are estimated to have an annual commercial value in Canada of the order of 2.5 to 3.0 million dollars. Of this value, a very substantial proportion is attributable to one group of products, sodium silicates, which enter commerce in a variety of chemical formulae and grades. About 90 per cent of Canadian requirements of the sodium silicates is produced in Canada by one company, National Silicates Limited; the remainder is imported, principally from the U.S.A. No information is available on exports of the products.

The other silicates of this heading are, in general, not made in Canada; domestic requirements are met by imports. The use of each is small and, therefore, the value of imports of the entire group is probably well under \$250,000.

In the following pages, the calcium silicates are dealt with first, followed by the sodium silicates and finally by a number of other silicates for which some submission was made.

(1) Explanatory Notes to the Brussels Nomenclature 1955, Third Impression, p. 207

CALCIUM METASILICATE-WOLLASTONITE - 25.32
AND OTHER CALCIUM SILICATES - 28.45

Calcium silicates occur naturally as the mineral wollastonite or they may be produced by chemical processes. In North America, both types are available commercially but they are used in different applications. Wollastonite is a natural calcium metasilicate mined principally at Willsboro, New York; other, much smaller and less pure occurrences have also been worked in California.

The information available to the Board indicates that the natural form, wollastonite, is the principal calcium silicate entering trade in Canada. Although chemically produced calcium silicates are known to be sold, no data are available regarding their use or economic importance.

The wollastonite deposits at Willsboro, New York, are worked by the Cabot Corporation. The ore contains various impurities which are removed by standard mineral refining processes and yields a product which exceeds 99 per cent in purity. The refined product is sold under the trade name "Cab-o-lite". It is imported and distributed in Canada by a subsidiary, Cabot Carbon of Canada Limited.

The Canadian market for wollastonite has grown rapidly since the product was introduced in 1953. However, no separate published data are available. The import statistics combine all calcium silicates, natural and synthetic, and are available only for the years 1956 to 1960 inclusive. In those years the value of Canadian imports of all calcium silicates was as follows:

Imports of Calcium Silicates (including wollastonite),
1956-60

	\$'000
1956	85
1957	85
1958	45
1959	80
1960	65

Source: Dept. of Trade and Commerce, Chemical Import Trends

In Canada, wollastonite is used as an extender in paints, enamels, plastics and floor tile and as an ingredient in the manufacture of ceramics. At the time of the hearing, the major use was said to be as an extender for paints.

Prices in Canada are not published but the Canadian distributor informed the Board that they followed the trend in the U.S.A. with allowances for duty, exchange and costs of distribution. In the U.S.A., the carload price since 1960 has been \$41.00 a ton and for less than carload lots, \$51.00 a ton. The price of the chemically produced calcium silicate has been six cents a pound (equivalent to \$120.00 a ton) during the same period.

Tariff Considerations

Calcium silicates are entered as unenumerated chemicals under tariff item 208t at rates of Free, B.P. and 15 p.c., M.F.N. Wollastonite is enumerated in an extract from item 208t with rates of Free, B.P. and 5 p.c., M.F.N. and in an extract from item 711 with rates of 5 p.c., B.P. and 5 p.c., M.F.N.

At the public hearing, in February 1961, Cabot Carbon Canada Limited proposed free entry for wollastonite under both the B.P. and M.F.N. Tariffs while it was not made in Canada and rates of 15 p.c., B.P. and 20 p.c., M.F.N., when ruled to be made in Canada.⁽¹⁾

The Rubber Association of Canada expressed an interest in hydrated, precipitated calcium silicate and recommended free entry under both the B.P. and M.F.N. Tariffs;⁽²⁾ it is now entered under item 208t, at rates of Free, B.P. and 15 p.c., M.F.N.

The Canadian Pharmaceutical Manufacturers Association listed calcium silicate as a relatively unimportant chemical used by its members and requested rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, until they are made in Canada, for chemicals used in the manufacture of pharmaceuticals.⁽³⁾

No other representations were made to the Board related specifically to calcium silicates.

Thus, except for the end-use proposal of the pharmaceutical manufacturers, all the interested parties proposed free entry under both the B.P. and M.F.N. Tariffs for both wollastonite and the chemically-produced calcium silicates.

Cabot Carbon supported its rate proposal by pointing out that the product was not now, nor likely to be, produced in Canada. The company spokesman also referred to the products which might be substituted for wollastonite in various applications and said that these also were unavailable from Canadian production.

The Rubber Association, in its general submissions, emphasized the competitiveness of the market in which its members operated. The Association's spokesman said that the cost of raw materials could have an effect in determining whether the industry would continue to be competitive.

At the public hearing there was some discussion whether wollastonite and the tariff items pertaining to it were within the terms of Reference 120. Items 208t and 711 were referred to the Board only insofar as they related to chemicals and the question arose whether wollastonite was a chemical or a mineral and therefore whether the extracts of items 208t and 711, which specified wollastonite, were within the terms of the current inquiry.

(1) Transcript, Vol. 31, p. 4565, 4574

(2) Same, Vol. 165, p. 24368

(3) Same, Vol. 87, p. 13321

The Department of National Revenue informed the Board that they considered the wollastonite that was being imported to be a chemical.⁽¹⁾ However, spokesmen for the Industry Committee and Cabot Carbon disagreed with this appraisal. The latter pointed out that the product was mined and was subjected to common refining processes such as magnetic and gravity separation, crushing and grinding. These representatives did not consider the high purity of the end product to be sufficient reason to classify it as a chemical. They pointed out that specifications for chemicals are frequently based on the impurities that are permitted instead of on the degree of purity of the chemical itself. In this respect the Industry Committee spokesman said that the Cabot Carbon product contained 0.5 per cent of silicon dioxide and that this might differentiate the mineral from the chemical product.

In the Explanatory Notes to the Brussels Tariff Nomenclature wollastonite is specifically excluded from heading 28.45 and is classified in heading 25.32.⁽²⁾ The calcium silicates produced by chemical processes such as precipitation are under heading 28.45. If the rules of the B.T.N. were used to classify wollastonite it would require the deletion of the extract of tariff item 208t in which it is enumerated, because item 208t relates to "chemicals and drugs, n.o.p.". Wollastonite would then be classified only under the extract of tariff item 711 in which it is enumerated. As noted earlier the rates of duty under the extract of item 711 which relate to wollastonite are 5 p.c., B.P. and 5 p.c., M.F.N.

SODIUM SILICATES

The Products and the Industry

When sodium carbonate (soda ash) is fused by heat with silica sand, the sodium oxide and silicon dioxide combine to form sodium silicates. The proportions in which the raw materials are used determine the chemical formula and properties of the product. A wide range of sodium silicates with varying ratios of sodium oxide to silicon dioxide are manufactured for the commercial market. Some of these are commercially available as solutions or in anhydrous forms; the latter are available in several degrees of fineness of particles. The sodium silicates of commerce include silicates, metasilicates, orthosilicates and sesquisilicates of sodium.

Sodium silicates are produced in Canada by one company only, National Silicates Limited, which operates plants at New Toronto, Ontario and Valleyfield, Quebec. National Silicates is a subsidiary of the Philadelphia Quartz Company, a major producer of silicates in the U.S.A. Production began at Toronto in 1933 with an initial capacity of 45 million pounds of liquid sodium silicate. The productive capacity of the Toronto plant was increased on eleven occasions up to 1961 and an additional expansion was under way in 1961, at the

(1) Transcript, Vol. 31, p. 4567

(2) Explanatory Notes to the Brussels Nomenclature, 1955, Volume 1, p. 208

time of the public hearing on silicates. It was reported that in June, 1963, the company brought into operation a new plant at Toronto to manufacture sodium metasilicate and sodium sesquisilicate.⁽¹⁾

The plant at Valleyfield began operations in June, 1957 and was established primarily to supply the Davison Chemical Company with silicates which the latter used in the manufacture of petroleum catalysts. The silicates are supplied in liquid form and are pumped from the National Silicates plant through a pipeline to the adjoining site of Davison Chemical. The Valleyfield unit now manufactures and sells solid silicates in addition to the liquid forms. These products are sold to other consumers as well as to Davison Chemical.

The basic process for the manufacture of sodium silicates requires a large open hearth furnace which operates at about 2600° Fahrenheit. Because the refractory materials in the furnace may be damaged by successive cooling and heating, continuous operation is an important consideration in economy of production. Cooling and heating also seriously affect the life of the refractory materials and is costly because several days are required to achieve the necessary, gradual changes in temperature, during which time crews must be in attendance although no production is possible.

In the U.S.A., plant capacities vary from about 2,000 tons to 50,000 tons or more annually. Both Canadian operations would be considered large by these standards.

At the time of the hearing, in 1961, National Silicates was manufacturing 30 grades of sodium silicates. These included various grades of liquid sodium silicate and several grades of solid or granular silicates. The ratio of sodium oxide to silicon dioxide in these products ranged from 1:3.22 to 2:1.

Because soda ash (sodium carbonate) is a much more costly material than silica sand, the cost of the end product generally increases as the content of sodium oxide increases. At the public hearing, National Silicates said that soda ash constituted about 75 per cent of its raw material costs. Soda ash is entered under item 210b, at rates of 15 cents per 100 pounds, B.P. and 25 cents per 100 pounds, M.F.N. In 1961, the ad valorem equivalent of the M.F.N. rate was approximately 16½ per cent. Silica sand is entered under item 295, free of duty under both the B.P. and M.F.N. Tariffs.

The Market

There are no published figures for production or sales of sodium silicates in Canada and the data on consumption are known to be incomplete. For 1962, the latter account for consumption in Canada of more than 120 million pounds of sodium silicates which cost \$2.4 million at the point of use inclusive of costs of transportation and handling. The spokesman for National Silicates said that 80 per cent or more of Canadian consumption was in Ontario and Quebec.

(1) Chemical Week, June 22, 1963, p. 61

Sodium silicates are used in a large variety of manufacturing processes. However, the major applications are few and about 70 per cent of the total consumption was said to be in the production of adhesives and paper products, soaps and detergents, petroleum catalysts and in mineral ore flotation. Minor uses occur in the oil, rubber, textile, ceramics, glass and asphalt shingle industries. Although, as mentioned earlier, the available consumption data are incomplete, they do give some indication of the distribution of use by various industries.

Consumption of Sodium Silicates by Industry,
1960-62

	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>
	'000 lb.			\$'000		
Pulp and Paper	7,115	6,935	10,159	173	174	208
Corrugated Boxes	4,603	4,721	4,029	184	203	204
Soaps & Cleaning Compounds	22,173	22,172	24,069	469	478	554
Misc. Chemicals	61,901	67,373	63,863	688	742	775
Mines & Mineral Industries	14,975	15,000 ^(a)	15,000 ^(a)	576	575 ^(a)	575 ^(a)
Other	<u>3,361</u>	<u>3,004</u>	<u>3,556</u>	<u>98</u>	<u>85</u>	<u>87</u>
Total Accounted	114,128	119,205	120,676	2,188	2,257	2,403

(a) Estimated

Source: D.B.S., various publications

The spokesman for National Silicates informed the Board that the company had "a very healthy share" of the domestic market and that this had been the case for several years. His remarks indicated that Canadian production would account for at least 90 per cent of the Canadian consumption.

In the five years, 1959-63, imports have varied between 8.5 and 10.6 million pounds, valued at about \$420,000 and \$520,000. Most imports are from the U.S.A.; much smaller amounts originate in Britain. Imports from other countries are generally negligible. France is the only other country which has supplied the Canadian market with any regularity in recent years. Imports from France were first reported for the year 1958 and at their peak, in 1960, constituted less than three per cent of total imports.

Imports of Sodium Silicates, by Principal Country of Origin,
Selected Years, 1953-64

	<u>U.K.</u>	<u>France</u> thousand pounds	<u>U.S.A.</u> thousand pounds	<u>Other</u>	<u>Total</u> '000 lb. \$'000	
1953	243	-	4,684	-	4,927	170
1955	1,007	-	4,415	-	5,423	210
1957	1,121	-	6,112	-	7,233	321
1959	1,230	247	8,470	-	9,946	435
1961	664	121	9,739	120	10,644	522
1962	461	88	9,958	-	10,507	528
1963	370	66	8,002	11	8,460	419
1964	174	-	5,550	88	5,812	287

Source: Trade of Canada Imports, s.c. 8362

National Silicates informed the Board that

"the great bulk of the imports from the United States has consisted of special forms of sodium silicate not produced in Canada. It has been National Silicates Limited's policy to itself import special forms. ...required by the Canadian market, if the volume is insufficient to justify manufacturing in Canada, but to undertake manufacture as soon as volume increases to a point which will support production in this country."(1)

The company also indicated that imports from Britain are also generally of forms not produced in Canada.

Because most of the use of sodium silicates occurs in Ontario and Quebec, it is to be expected that most imports would be entered in these provinces. This was the case in 1962 and 1963; in each of these years 90 per cent of imports was into these provinces. More than twice as much was entered into Ontario as into Quebec.

Imports of Sodium Silicates by Region of Entry, 1962 and 1963

	<u>Atlantic Provinces</u>	<u>Quebec</u>	<u>Ontario</u> thousand pounds	<u>Prairie Provinces</u>	<u>British Columbia</u>	<u>Canada</u>
1962	124	3,031	6,449	659	244	10,507
1963	77	2,454	5,226	265	438	8,460

Source: Dominion Bureau of Statistics, s.c. 8362

(1) Transcript, Vol. 31, p. 4612

Sodium silicates are sold in Canada, f.o.b. works, Toronto or Valleyfield. Because fewer products and grades are produced at Valleyfield, Toronto is the major pricing point for Canadian production. In the U.S.A. the basis of sale is the same as in Canada, with a larger number of products and grades being available in the U.S.A.

At the time of the hearing in February 1961, Canadian prices were generally from 12 to 16 per cent higher, f.o.b. plant, than prices in the U.S.A., and published prices in both countries had been unchanged since at least 1959. However, the change in the value of the Canadian dollar since 1959 has narrowed the spread in f.o.b. prices, expressed in Canadian funds. A comparison of Canadian and United States prices is given below for representative grades of sodium silicates.

Prices of Sodium Silicates, in Canada and the U.S.A., f.o.b. Works,
Selected Products, 1960, 1962, 1964

		<u>1960</u>	<u>1962</u>	<u>1964</u>
<u>Sodium Silicate, 40° Bé.</u>			\$Can.	
<u>per cwt.</u>	Canada	1.35	1.35	1.35
	U.S.A.	1.16	1.28	1.29
<u>Sodium Silicate, Solid, in bags,</u>				
<u>per ton</u>	Canada	75.00	75.00	75.00
	U.S.A.	65.45	72.15	72.81
<u>Sodium Sesquisilicate, Hydrated, in bags,</u>				
<u>per cwt.</u>	Canada	5.65	5.65	5.65
	U.S.A.	4.85	5.34	5.39
<u>Sodium Metasilicate Pentahydrate, in bags,</u>				
<u>per cwt.</u>	Canada	4.85	4.85	4.85
	U.S.A.	4.32	4.76	4.80

Source: Canadian Chemical Processing and Oil, Paint and Drug Reporter; U.S. prices converted to Canadian funds at annual average rates of exchange

As is the case with many other relatively low-priced industrial chemicals, the cost of transportation is an important factor in the laid-down cost of silicates. The spokesman for National Silicates, speaking of the considerations which led the Company to establish its Valleyfield plant, said:

"...National Silicates recognized the large tonnage which they [Davison Chemical] indicated they would require would have to be produced locally because the transportation cost from Toronto to the Montreal area would make the delivered cost prohibitive for their purposes ..."(1)

The Valleyfield plant's ability to supply the Davison company by pipeline would minimize transportation costs. The Toronto location is in the heart of the area in which the soap and detergent industry is situated. Toronto and Valleyfield are also relatively close to many major chemical plants. In general, the company's plants appear to be well located to serve consumers in Quebec and Ontario, where most of the use of silicates occurs.

Potentially competitive plants in the U.S.A. would appear to be at a considerable freight disadvantage in supplying this market area. In February, 1961, the freight advantage of National Silicates to the principal consuming centres in Canada was substantial. For sodium silicate, 40° Baumé, this advantage varied from 21 per cent to 49 per cent of the price f.o.b. works in the U.S.A. For solid sodium silicate, in bulk, the advantage varied from approximately 16 per cent of the price in the U.S.A. to more than 20 per cent, for most consuming locations. Similar advantages also existed in 1964.

Tariff Considerations

Sodium silicates are entered under tariff item 210, which refers, in part, to "silicate of soda, dry or in water solution", with rates of Free, B.P. and 12½ p.c., M.F.N.

At the public hearing, in February, 1961, National Silicates Limited proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., in an item worded like heading 28.45 of the Brussels Tariff Nomenclature. (1)

At a later hearing, the Canadian Pulp and Paper Association expressed an interest in sodium silicate and urged that the duties on chemicals used by its members should not be increased. (2)

The Canadian Pharmaceutical Manufacturers Association also indicated interest in sodium silicate as a chemical of minor economic importance to its members. It proposed that chemicals used in the manufacture of pharmaceuticals should be entered at rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, while they were not produced in Canada, and at rates of 15 p.c., B.P. and 20 p.c., M.F.N., when ruled to be made in Canada. (3)

Polymer Corporation Limited listed sodium silicate as one of the chemicals which it used to produce synthetic rubber. The Corporation urged free entry under both the B.P. and M.F.N. Tariffs for chemicals so used. (4) In effect it was requesting the continuation of end-use item 851.

No other representations were made to the Board relating specifically to sodium silicates.

(1) Transcript, Vol. 31, p. 4614

(2) Same, Vol. 85, p. 13006

(3) Same, Vol. 87, p. 13278

(4) Same, Vol. 89, p. 13501

National Silicates claimed that it was at a disadvantage relative to foreign producers because of higher costs of raw materials. The company spokesman said that the existing duty on sodium carbonate (soda ash) resulted in a disadvantage of approximately 14 per cent in its purchases of this chemical. Soda ash was said to constitute about 75 per cent of the cost of raw materials. The company also referred to competition from overseas and the additional vulnerability of the Canadian market as a result of the opening of the St. Lawrence Seaway.

Although National Silicates may pay more for its soda ash than producers in the U.S.A. the company's location in relation to the principal consumers of sodium silicates confers a substantial advantage.

Imports from France, although cited as a serious threat, have in fact been negligible in relation to Canadian consumption; they have not approached one per cent of the total in any year. Moreover, the unit value of imports from France suggests that they are probably of grades not available from Canadian production. Imports from the U.K. were said, by the spokesman for National Silicates, also to be of kinds not made in Canada. Thus, imports from overseas do not appear to constitute a threat to the company's business.

Imports from the U.S.A., although substantial, are less than ten per cent of Canadian use. National Silicates said that most of these imports were entered by the company in order to supply customers with a wider range of grades and kinds than was available from its own production. The company spokesman said that when Canadian use of any of these was sufficient to warrant production in Canada that it would begin their manufacture.

OTHER SILICATES OF HEADING 28.45

The Rubber Association of Canada expressed an interest in aluminum silicate and urged free entry for it under both the B.P. and M.F.N. Tariffs.⁽¹⁾ The product is now entered as an unenumerated chemical under item 208t, with rates of Free, B.P. and 15 p.c., M.F.N.

Canadian Titanium Pigments Limited indicated an interest as a potential producer of "basic silicate white lead" and urged rates of 15 p.c., B.P. and 20 p.c., M.F.N.⁽²⁾ The product to which it referred is now entered under item 243 at the proposed rates. In the form in which it enters trade, the product would be classified under heading 32.07 of the B.T.N. and not under heading 28.45.

The classification of basic lead silicate was also discussed at the hearing by the spokesmen for the Industry Committee, McArthur, Irwin Limited and the Canadian Paint Varnish and Lacquer Association. The product is available as a single chemical but this form was said to be of negligible importance in trade; the product which enters trade under the name of "basic lead silicate" was said to be a prepared pigment and was a mixture rather than a separately defined chemical. The spokesmen agreed that the product that was produced by McArthur, Irwin

(1) Transcript, Vol. 165, p. 24368

(2) Same, Vol. 98, p. 14589

and that which was imported from the U.S.A. under that name, would be classified under B.T.N. heading 32.07 and not 28.45.⁽¹⁾

National Silicates Limited referred to potassium silicates and indicated an interest in their eventual production in Canada.⁽²⁾ The company made no specific proposal regarding them. Potassium silicates are now entered under item 208t, with rates of Free, B.P. and 15 p.c., M.F.N. Were they ruled to be made in Canada they would be subject to rates of 15 p.c., B.P. and 20 p.c., M.F.N., under the existing Tariff.

The spokesman for the Industry Committee noted that zirconium silicate is entered under tariff item 295a, free of duty under all Tariffs and recommended that, because item 295a was outside the terms of Reference 120, this chemical be relocated with the existing rates, under heading 28.45, in order to "preserve the completeness of the meaning which Brussels Nomenclature ascribes to this heading."⁽³⁾

In a general submission, Naugatuck Chemical Division expressed an interest in magnesium silicate.⁽⁴⁾ However, the company did not indicate its position with respect to rates of duty for chemicals not made in Canada. It now imports magnesium silicate for use in the manufacture of plastics under end-use item 921, free of duty under both the B.P. and M.F.N. Tariffs. Apart from end-use treatment, magnesium silicate would be entered under item 208t, at rates of Free, B.P. and 15 p.c., M.F.N.

The Canadian Pharmaceutical Manufacturers Association listed magnesium silicate as a chemical of relatively small economic importance to its members and proposed rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for chemicals so used, while they are not made in Canada.⁽⁵⁾ The Association also listed magnesium trisilicate as a chemical whose annual use by any reporting member exceeded \$1,000 and made the same proposal regarding it.

Magnesium silicates were the subject of discussion with respect to classification. Many magnesium silicates occur naturally as talc, soapstone, potstone, steatite and other minerals. In the B.T.N., these are classified as minerals under heading 25.27. In the Canadian Customs Tariff, they are entered either under an extract of tariff item 711, which refers to "talc or soapstone" at rates of 10 p.c., B.P. and 15 p.c., M.F.N., or under another extract of item 711 which refers to "micronized talc, dolomite and mica" at rates of Free, B.P. and 5 p.c., M.F.N.

It appears that the B.T.N. and the Canadian Customs Tariff are consistent in their classification of these mineral forms. The products which are cited above and which are classified under the extracts of item 711 are regarded as minerals, and therefore outside the terms of Reference 120.

(1) Transcript, Vol. 31, p. 4591

(2) Same, Vol. 31, p. 4614

(3) Same, Vol. 31, p. 4560

(4) Same, Vol. 6, p. 909

(5) Same, Vol. 87, p. 13321

The chemical forms would be classified under heading 28.45 and under item 208t because they are not ruled to be made in Canada. The available data regarding the chemical forms suggest relatively small importations up to 1960, the latest year for which statistics are available.

No other representations to the Board related specifically to products of heading 28.45. For all other products classified under the heading the Industry Committee proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N. The Committee's recommendation would apply to products which were not the subject of proposals by others and to those for which end-use proposals were made, when they were imported for any other use. The spokesman for the Committee did not indicate why these rates were appropriate specifically for the products to which they would apply.

BORATES AND PERBORATES - B.T.N. 28.46INTRODUCTION

Heading 28.46 of the Brussels Tariff Nomenclature relates to only two chemicals of known commercial importance, sodium perborate and sodium tetraborate or borax. None of the products which are classified by the heading are known to be produced in Canada.

Imports of sodium perborate are largely from Britain; imports of borax are almost entirely from the U.S.A. The average value of imports of these two products in the three years 1961-63, was about one million dollars annually, of which borax accounted for more than 85 per cent. Known imports of other chemicals of the heading appear to be negligible.

SODIUM PERBORATE

Sodium perborate is a white crystalline powder which, when dissolved in water, releases oxygen in a series of reactions and thus accomplishes the bleaching, for which the perborate is valued. Sodium perborate is not made in Canada and most Canadian supplies were said to originate in Britain.

In Canada, the chemical is used principally in the manufacture of soaps and washing compounds. Being a solid, it is readily mixed with the other ingredients of powdered detergents. At the public hearing, in February 1961, this application was said to account for about 80 per cent of Canadian consumption. Other minor uses were said to be as a textile bleach and as a constituent of denture cleansers and cold wave preparations. The annual value of Canadian consumption increased from \$95,000 in 1959 to \$160,000 in 1963.

The British producers and Canadian consumers who appeared at the hearing agreed that the combination of mildness of bleaching action and its solid form were properties not available in other chemicals. Sodium perborate is available both as a tetrahydrate and a monohydrate; the former is the major form of commerce.

Tariff Considerations

Sodium perborate is entered under tariff item 208t, at rates of Free, B.P. and 15 p.c., M.F.N.

At the public hearing, in February 1961, Imperial Chemical Industries Limited, of England, proposed that the existing rates be continued while the product is not made in Canada. When it is ruled to be made in Canada, the company would not object to rates of 15 p.c., B.P. and 20 p.c., M.F.N.⁽¹⁾

(1) Transcript, Vol. 31, p. 4637

Laporte Chemicals Limited, also of England, the other principal supplier of the Canadian market, also urged that the rates of Free, B.P. and 15 p.c., M.F.N. be continued. However, the company proposed that these rates be continued after the product was made in Canada.⁽¹⁾

Procter and Gamble Canada Limited, which claimed to be the largest consumer of sodium perborate in Canada, proposed free entry under the B.P. Tariff and supported retention of the existing British preference. However, the company spokesman said he would not object to a lower margin of preference if the Board thought this to be desirable. He also said the company would not object to rates of 15 p.c., B.P. and 20 p.c., M.F.N. when sodium perborate was made in Canada.⁽²⁾

The spokesman for the Industry Committee opposed the Laporte rate proposal of Free, B.P. and 15 p.c., M.F.N., when the product was made in Canada. At that time the Committee urged that the rates should be 15 p.c., B.P. and 20 p.c., M.F.N.⁽³⁾

The Canadian Pharmaceutical Manufacturers Association expressed an interest in the chemical which was listed as being of small economic importance to its members. The Association proposed that chemicals used in the manufacture of pharmaceuticals should be entered at rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, until they were made in Canada; when so made they should be dutiable at 15 p.c., B.P. and 20 p.c., M.F.N.⁽⁴⁾

The Javex Company Limited also expressed an interest in sodium perborate and recommended rates of 15 p.c., B.P. and 20 p.c., M.F.N. because it had recommended these rates for sodium hypochlorite, a chemical competitive with sodium perborate as a bleaching agent.⁽⁵⁾

The British producers of sodium perborate said that the existing free entry under the B.P. Tariff had been a benefit to the British manufacturing industry by providing a market for their products and also a benefit to Canadian consumers by providing the product at low cost. Their spokesmen urged that retention of existing preferences would continue to benefit both countries.

Procter and Gamble supported free entry under the B.P. Tariff on the grounds that U.K. prices, quality and service were acceptable. Its spokesman suggested that maintenance of the existing preference would be "in line with present government policy."⁽⁶⁾

SODIUM TETRABORATE (BORAX)

Sodium tetraborate (borax) is a white, crystalline substance or a powder. When heated, it fuses to form a glassy mass. Borax is produced in California by the fractional crystallization of natural brines, and in California and Nevada from naturally-occurring borax, for example kernite, colemanite and "natural borax".

(1) Transcript, Vol. 31, p. 4645, 4647

(2) Same, Vol. 31, p. 4650, 4651

(3) Same, Vol. 31, p. 4647

(4) Same, Vol. 87, p. 13321

(5) Same, Vol. 73, p. 11071

(6) Same, Vol. 31, p. 4650

Borax does not occur naturally in Canada and all supplies are imported, almost entirely from the U.S.A. Canadian consumption has increased substantially in the past decade. In 1963, imports reached a peak of about 29 million pounds valued at slightly more than one million dollars, but in 1964 declined to 21 million pounds valued at \$740,000. About 99 per cent of the total originates in the U.S.A.

Imports of Borax and Fused Borax (Borax Glass), by Country
of Origin, Selected Years, 1953-64

	<u>U.K.</u>		<u>U.S.A.</u>		<u>Total</u>	
	'000 lb.	\$'000	'000 lb.	\$'000	'000 lb.	\$'000
1953	-	-	19,160	567	19,160	567
1955	-	-	18,844	552	18,844	552
1957	-	-	20,569	608	20,569	608
1959	13	1	20,144	616	20,158	616
1961	-	-	23,442	788	23,442	788
1962	16	1	26,038	902	26,054	903
1963	44	3	29,129	1,036	29,173	1,040
1964	101	7	20,933	733	21,034	740

Source: D.B.S., Trade of Canada Imports, s.c. 8342

The form of the imported borax is not known. In trade publications, in the U.S.A., the three grades usually listed are "granular decahydrate, 99.5 per cent", "technical pentahydrate, 99.5 per cent" and "technical anhydrous, 99 per cent". The grades, as listed, are in order of increasing price. In 1964 their prices were \$50.00, \$64.50 and \$92.00 per ton, respectively. The average value of Canadian imports in recent years has been between \$68.00 and \$72.00 per ton, suggesting that more than one grade is imported.

In the U.S.A., the principal applications of borax are in the manufacture of glass, ceramics, adhesives, agricultural chemicals and detergents, with a number of other, less important uses. Canadian consumption data are incomplete and account for only one quarter of the reported imports.

Tariff Considerations

Subject to various end-use provisions, borax is entered under tariff item 208, "boracic acid and borax in packages of not less than twenty-five pounds weight" and under item 208t if in smaller packages. It is also entered under tariff item 208f, "fused borax, commercially or generally known as borax glass." Under items 208 and 208f entry is free under the B.P. and M.F.N. Tariffs; under item 208t the rates are Free, B.P. and 15 p.c., M.F.N.

At the public hearing, in February 1961, Union Carbide Canada Limited informed the Board that it used borax as a rust inhib-

itor for ethylene glycol antifreeze and proposed continued free entry in an item worded like heading 28.46 of the B.T.N.⁽¹⁾

The Canadian Pulp and Paper Association also supported continued free entry for borax.⁽²⁾

In addition, other interests were made known to the Board with proposals for end-use items. These specified either free entry for a particular use without qualification, or free entry until the product was made in Canada when rates of 15 p.c., B.P. and 20 p.c., M.F.N., would apply, and one recommendation, by the Canadian Pharmaceutical Manufacturers Association, for rates of Free, B.P. and 15 p.c., M.F.N., until the product was made in Canada.

The various end-use interests are tabulated below:

<u>Interest Expressed by:</u>	<u>End-use Involved</u>	<u>Proposed Rates</u>	
		<u>B.P.</u>	<u>M.F.N.</u>
Canadian Federation of Agriculture ⁽³⁾	fertilizers	Free	Free
	pesticides	Free	Free
Cdn. Pharmaceutical Mfrs. Assoc'n ⁽⁴⁾	pharmaceuticals	Free ^(a)	15 p.c. ^(a)
Seven Pesticides Manufacturers ⁽⁵⁾	pesticides	Free ^(a)	Free ^(a)
Polymer Corporation ⁽⁶⁾	synthetic rubber	Free	Free

(a) Until made in Canada; when made in Canada, 15 p.c., B.P. and 20 p.c., M.F.N.

The consumers of the product generally supported their proposals on the basis of the additional costs to them that would be involved if the chemical were dutiable at more than the existing rates. In general statements, some said that higher rates would make them less competitive in the domestic or the export markets.

The Pharmaceutical Manufacturers gave no indication why their proposed rates would be appropriate specifically for borax. All other parties recommended continued free entry.

In the B.T.N., crude natural borates such as "kernite or tincal" and the sodium borates which are also known as "natural borax" are included under heading 25.30 and are excluded from heading 28.46. However, "natural borates obtained by evaporating complex brines from certain salt lakes", are included under heading 28.46.⁽⁷⁾

(1) Transcript, Vol. 31, p. 4657

(2) Same, Vol. 85, p. 13006

(3) Same, Vol. 83, p. 12813; Vol. 110, p. 16631

(4) Same, Vol. 87, p. 13278

(5) Same, Vol. 108, p. 16332

(6) Same, Vol. 89, p. 13501

(7) Explanatory Notes to the Brussels Nomenclature, 1955, p. 119, 120, 209

At the hearing, in September 1962, the Industry Committee spokesman said: "As far as the Committee is aware, the important article of commerce identified as borax is the chemical dealt with under heading 28.46 ..." He continued after some questions, saying:

"It is the Committee's opinion that neither argols or naturally occurring borax have importance under the Canadian Tariff sufficient to warrant continuing special provisions now existing for them."(1)

Although the Committee spokesman said that the forms that were commercially important would be classified under heading 28.46, at the hearing in 1961 he said that a considerable amount of the borax being imported was probably of "mineral borax in addition to the chemical borax."(2) In fact, neither the Industry Committee nor any of the representatives of chemical companies present at the various hearings could offer any explanation for the large difference between reported imports in 1959 (about 20 million pounds) and the Canadian consumption that was accounted for in that year (about 7 million pounds). None could even suggest what application could absorb additional imports of about 13 million pounds, having an estimated value of about \$400,000.

If the reference to borax in items 208 and 208f were deleted and a new tariff item were established corresponding with the wording and meaning of heading 28.46, and if no other item were established that would correspond with heading 25.30, an unknown part of current imports of the naturally occurring form might remain unenumerated under item 711. Rates of 15 p.c., B.P. and 20 p.c., M.F.N., would apply to these imports even though the expressions of interest to the Board generally favoured duty-free entry, the rates under the existing Tariff.

OTHER PRODUCTS OF HEADING 28.46

Seven pesticide manufacturers, in a joint presentation, urged free entry under both the B.P. and M.F.N. Tariffs for some chemicals used in the manufacture of pesticides. Sodium metaborate was included among these. The manufacturers qualified their proposal to apply only until the product was made in Canada; when it was so made they supported rates of 15 p.c., B.P. and 20 p.c., M.F.N. (3)

The Canadian Federation of Agriculture made a similar proposal for free entry for sodium metaborate and sodium pentaborate but without any qualification regarding the products' "made-in-Canada" status. (4) Sodium metaborate and sodium pentaborate, apart from end-use provisions, are entered under tariff item 208t, Free, B.P., 15 p.c., M.F.N. It should be noted that the proposal of the Industry Committee for rates of 15 p.c., B.P. and 20 p.c., M.F.N., would apply to imports of the above products when intended for uses other than the manufacture of pesticides.

(1) Transcript, Vol. 85, p. 12924, 12925

(2) Same, Vol. 31, p. 4660

(3) Same, Vol. 108, p. 16332

(4) Same, Vol. 110, p. 16631

No other representations were made to the Board specifically related to products of heading 28.46. The spokesman for the Industry Committee said he believed that all important chemicals of heading 28.46 were dealt with in various briefs. For all products of the heading for which no other proposal was made to the Board, he proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., in an item worded like heading 28.46 of the B.T.N.⁽¹⁾ No reasons were advanced for these rates specifically for this heading; they were the rates proposed generally by the Industry Committee.

It should be noted that the proposal by the Industry Committee of rates of 15 p.c., B.P. and 20 p.c., M.F.N. is designed to apply to imports of sodium metaborate and sodium pentaborate when for uses other than the manufacture of pesticides.

(1) Transcript, Vol. 31, p. 4633, 4644

SALTS OF METALLIC ACIDS - B.T.N. 28.47
(FOR EXAMPLE CHROMATES, PERMANGANATES, STANNATES)

INTRODUCTION

There are a large number of chemicals in B.T.N. heading 28.47 but only a few are known to be of commercial importance in Canada. Little statistical information is available regarding most of them but it appears that the market in Canada is about \$1,800,000 annually. Two chemicals, sodium dichromate and sodium aluminate, together, constitute about 80 per cent of the total value of sales; none of the others has annual sales of as much as \$100,000.

Of the products of heading 28.47, only sodium aluminate in solution is known to be made in Canada and Canadian production was said to account for only a very small part of Canadian use of sodium aluminate. None of the other chemicals is known to be made in Canada; most appear to be entered under tariff item 208t at rates of Free, B.P. and 15 p.c., M.F.N.

SODIUM DICHROMATE

Sodium dichromate is a red to bright orange crystalline substance. In the usual methods of production, the chemical occurs as a solution which must be processed further in order to obtain the crystalline form. The chemical is valued mainly because of the products that are made from it. It is the basic raw material for the production of chromium oxide, a colouring medium for pigments; it is converted into chromium sulphate, a major tanning agent for leather; it is the most important raw material in the manufacture of chrome pigments, such as chrome yellows, chrome orange and chrome green.

Sodium dichromate is not produced in Canada and the Canadian demand for it is supplied almost entirely from the U.S.A. and Britain, the U.S.A. usually supplying from one half to three quarters of the total. In 1964, Canada imported 10.3 million pounds valued at \$1.2 million.

Imports of Sodium Dichromate, by Principal Country of Origin,
Selected Years, 1953-64

	<u>U.K.</u>	<u>U.S.A.</u>	<u>Other</u> ^(a)	<u>Total</u>	
	thousand pounds			'000 lb.	\$'000
1953	1,377	2,678	949	5,003	505
1955	1,790	4,373	600	6,763	736
1957	2,149	3,557	482	6,187	727
1959	1,318	5,012	229	6,560	761
1961	2,488	6,292	71	8,851	1,002
1962	2,685	5,814	306	8,806	1,033
1963	2,881	6,328	518	9,726	1,114
1964	2,706	7,239	360	10,305	1,198

(a) Includes the Republic of South Africa, Western Germany, Japan and Poland

Source: D.B.S., Trade of Canada Imports, s.c. 8347

A substantial part of the imports from the U.S.A. was said to be of the solution, which is shipped in tank cars in a concentration of 69 per cent; imports from all other countries are of the crystalline form. At the public hearing, the spokesman for the Canadian Color Makers Association said that members of his industry use chiefly the solution. This, he said, was priced on the basis of 100 per cent concentration and costs less per hundredweight, 100 per cent basis, than the crystals, because the crystals require further processing of the solution. This lower cost tends to offset the additional freight cost involved in transporting the less concentrated, liquid material; the liquid also has certain convenience in use.⁽¹⁾

Canadian consumption of the chemical has been increasing rapidly in recent years. In the five years since 1959 Canadian use appears to have risen by almost two thirds.

The principal uses of sodium dichromate are in tanning leather and in the production of chemicals. The available statistics on consumption are given below.

Consumption of Sodium Dichromate, by Industry,
1957-64

	<u>Leather Tanning</u>	<u>Chemicals</u>	<u>Unaccounted</u> ^(a)	<u>Total</u> ^(b)
	thousand pounds, 100% equivalent			<u>Imports</u>
1957	2,030	2,610	445	5,085
1958	1,998	2,999	71	5,068
1959	1,906	2,783	316	5,005
1960	2,102	3,324	366	5,792
1961	2,853	3,915	132	6,900
1962	2,459	3,844	700	7,003
1963	..	..	..	7,765
1964	..	..	..	8,097

(a) By subtraction

(b) Assumes that all imports from the U.S.A. are of the 69% solution

Source: D.B.S., various publications

At the public hearing, the Color Makers Association indicated that its members used 1,438,059 pounds of sodium dichromate in 1958, valued at \$205,897; in 1959, its members used 1,784,119 pounds, valued at \$249,942. These amounts were 48 and 64 per cent, respectively, of the total use reported for chemicals and allied products.

Another important chemical use is in the manufacture of chromium oxide.⁽²⁾ The spokesman for British Chrome and Chemicals Canada Limited said that between 550,000 and 600,000 pounds, annually,

(1) Transcript, Vol. 32, p. 4723-4

(2) See section of the Report on chromium oxide, B.T.N. 28.21

were being used by his company in this application. In addition, Abbey Chemicals Limited also produces chromium oxide and imports its requirements of the dichromate. Thus, it appears that the consumption by the color makers and the chromium oxide manufacturers accounts for most of the use attributed to the chemical industry.

In the U.S.A., published prices for sodium dichromate, granular, in bags, f.o.b. works, have been \$13.00 a hundredweight since 1957. The average values of imports from the U.S.A. have been less than this in all of the period, suggesting that a large part of the imports is of the product in solution.

U.S.A. Prices of Sodium Dichromate, Granular, in Bags,
Carloads, at Works, and Unit Value of Imports from
the U.S.A. and the U.K., 1958-64

	Prices in (a) the U.S.A. in Canadian dollars per cwt.	Average Value of Imports (b)	
		U.S.A.	U.K.
1958	12.62	11.60	11.80
1959	12.47	11.50	11.90
1960	12.61	10.70	12.70
1961	13.17	11.00	12.00
1962	13.90	11.70	12.00
1963	14.02	11.10	12.70
1964	14.02	11.60	12.00

(a) From Oil, Paint and Drug Reporter

(b) Derived from Trade of Canada Imports, s.c. 8347

Tariff Considerations

Sodium dichromate is enumerated in tariff item 210, as "bichromate of soda", with rates of Free, B.P. and 12½ p.c., M.F.N. It was also entered under item 210f, "materials, for use in the manufacture of chromium oxide", free of duty under both the B.P. and M.F.N. Tariffs. This item expired June 30, 1965, but a new temporary item, 210j, was introduced providing duty-free entry for sodium bichromate for use in the manufacture of chromic acid and chromium sulphate, including basic chromium sulphate.

At the public hearing, in February 1961, British Chrome and Chemicals Canada Limited informed the Board that the Canadian use for the manufacture of chromium oxide accounted for 550,000 to 600,000 pounds of the dichromate. In view of the fact that imports are between eight million and ten million pounds annually, it is apparent that item 210 is the principal item for most imports of sodium dichromate.

British Chrome proposed retention of the existing rates under item 210, Free, B.P. and 12½ p.c., M.F.N., until the product was made in Canada. The company spokesman said that when it is so made, he had no objection to rates of 15 p.c., B.P. and 20 p.c., M.F.N., although he

would prefer lower rates at that time. He also said that his company would not ask for the renewal of item 210f because he felt it had lost its usefulness.⁽¹⁾

At a later hearing, Abbey Chemical Company, the other Canadian producer of chromium oxide, opposed deletion of tariff item 210f. The company proposed retention of this item until sodium dichromate was made in Canada. When it is so made, the company supported rates of 15 p.c., B.P. and 20 p.c., M.F.N. At that hearing, the company spokesman also said that if the provisions of item 210f were not continued, then he supported free entry until sodium dichromate is made in Canada, as proposed by the Tanners Association.⁽²⁾

The Tanners Association of Canada urged that sodium dichromate should be entered free of duty under both the B.P. and M.F.N. Tariffs, until it is made in Canada. When so made, the Association supported rates of 15 p.c., B.P. and 20 p.c., M.F.N.⁽³⁾

The Canadian Color Makers Association proposed the creation of an end-use item for specific inorganic chemicals which were not made in Canada, when for use in the manufacture of synthetic colored pigments of B.T.N. headings 32.05, 32.06, 32.07 and 32.09, with free entry under both the B.P. and M.F.N. Tariffs until the chemicals are made in Canada. When so made, the Association supported rates of 15 p.c., B.P. and 20 p.c., M.F.N. Sodium dichromate was one of the chemicals specified by the Association for such treatment.⁽⁴⁾

Polymer Corporation Limited expressed an interest in sodium dichromate and urged retention of tariff item 851, which provides for free entry under all Tariffs, for chemicals used in the manufacture of synthetic rubber.⁽⁵⁾

The Canadian Pharmaceutical Manufacturers Association indicated that sodium dichromate was a product of minor economic importance to its members and recommended rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for such products when used in the manufacture of pharmaceuticals, until they are made in Canada. When so made, they would bear rates of 15 p.c., B.P. and 20 p.c., M.F.N.⁽⁶⁾

Thus, except for end-use recommendations, there were two rate proposals before the Board, that of British Chrome for rates of Free, B.P. and 12½ p.c., M.F.N., the existing rates under item 210 and that of the Tanners Association and Abbey Chemical both of which supported free entry under both the B.P. and M.F.N. Tariffs, until sodium dichromate is made in Canada. All parties agreed that when the product is made in Canada the rates should be 15 p.c., B.P. and 20 p.c., M.F.N. However, none of them gave any indication why rates of 15 p.c., B.P. and 20 p.c., M.F.N., would be appropriate for sodium dichromate when it is made in Canada.

(1) Transcript, Vol. 32, p. 4696, 4711

(2) Same, Vol. 80, p. 12195-6

(3) Same, Vol. 32, p. 4718

(4) Same, Vol. 20, p. 2984-5; Vol. 32, p. 4725; Vol. 93, p. 14209

(5) Same, Vol. 89, p. 13501

(6) Same, Vol. 87, p. 13278

British Chrome and Chemicals informed the Board that all or most of its requirements of sodium dichromate are obtained from its parent company in England.⁽¹⁾ Under tariff item 210, the company is able to import the chemical free of duty under the B.P. Tariff. This preferential rate might account for the company's proposal for retention of the rate structure of item 210, as well as for its statement that end-use item 210f had lost its usefulness.

Of the other consumers of sodium dichromate -- Abbey Chemical, the tanners, the color makers and Polymer Corporation -- urged free entry under both the B.P. and M.F.N. Tariffs on the grounds that the product was an essential raw material whose cost was an important consideration in their processes. In addition, the spokesman for Abbey Chemical said that the British manufacturers who sold sodium dichromate were also merchant-producers of chromium oxide and that only in the U.S.A. could the company purchase the dichromate from producers who did not also manufacture chromium oxide. He claimed that if item 210f were deleted and the rates were those of existing item 210, Abbey Chemical would not be able to purchase sodium dichromate in a truly free market.

The tanners referred to the competition that they faced both in the domestic and in export markets and to the fact that sodium dichromate was an essential material for the production of chromium sulphate, the principal tanning agent for leather used in shoe uppers, handbags and gloves. The spokesman for the Association was concerned with obtaining lower M.F.N. rates while the product was not available from Canadian production.

SODIUM ALUMINATE

Sodium aluminate is a compound of sodium oxide and aluminum oxide and is used in the treatment of water. It is available as a solution and as a solid. The solid form, which is not made in Canada, was said to supply practically all of the Canadian use. In 1963 imports valued at \$255,000 were reported, more than double the value of imports in 1958, five years earlier.

At the public hearing in February 1961, Imperial Chemical Industries Limited, of England, (I.C.I.) estimated that 1,000 to 2,000 tons were being consumed annually in Canada, and that it typically supplied about 40 per cent of the total, the remainder being imported from Germany and the U.S.A. However, the spokesman for the company said that in 1960 his company had supplied about two-thirds of Canadian use. The discussion indicated that a large part of the consumption was by municipal water plants; the pulp and paper industry was also cited as an important consumer.

Sodium aluminate, the solid compound, is entered under item 208t at rates of Free, B.P. and 15 p.c., M.F.N. The solution is ruled to be made in Canada and would be entered under item 711 with rates of 15 p.c., B.P. and 20 p.c., M.F.N. The solution was said to be unstable and therefore unsuited for storage or transit. As a result, all imports are of the solid form.

⁽¹⁾ Transcript, Vol. 32, p. 4700

I.C.I. proposed retention of the existing rates under item 208t, until sodium aluminate was made in Canada "in quantities substantial in relation to Canadian demand".⁽¹⁾ The spokesman for I.C.I. did not specify the rates which should apply when it is made in Canada.

The Canadian Pulp and Paper Association reported that its members had used about 380 tons of sodium aluminate in 1958. It urged that there be no increase in the rates for chemicals used in the manufacture of pulp and paper.⁽²⁾

No other representations were made to the Board related specifically to sodium aluminate.

The spokesman for I.C.I. supported his proposal saying that the company had supplied a large part of Canadian use for many years. He referred to the earlier, general submissions of I.C.I. and the Association of British Chemical Manufacturers. In these it had been argued that for products not made in Canada, Canadian consumers benefitted from being able to purchase their supplies free of duty from British manufacturers. The submissions had also pointed out that Canadian manufacturers enjoyed a preferential rate when exporting to Britain and that, for many Canadian-produced chemicals, entry into the British market was free.

The Pulp and Paper Association claimed that although increases in duty for individual chemicals might not have a serious impact on the costs of its members, the cumulative effect of even small increases on a number of products might affect the ability of the industry to compete in both the domestic and export markets.

OTHER PRODUCTS OF HEADING 28.47

Other products of heading 28.47 were brought to the attention of the Board both in submissions on specific products and in more general submissions. Little information was made available to the Board and there is practically no published statistical information. None of the products is known to be made in Canada; most would be entered under item 208t, at rates of Free, B.P. and 15 p.c., M.F.N.

Calcium Plumbate

Calcium plumbate was brought to the Board's attention by Associated Lead Manufacturers (A.L.M.) of England. The brief of the company said that the chemical is used as a pigment in anti-corrosive paints. It is entered under item 208t at Free, B.P. and 15 p.c., M.F.N. The company proposed continued free entry under the B.P. Tariff, on the grounds that it would be desirable for Canadian consumers to have an alternative source of supply even when the product was made in Canada.⁽³⁾

The Canadian Paint Varnish and Lacquer Association supported the request of A.L.M. but qualified its support to apply only until the product was made in Canada.⁽⁴⁾

⁽¹⁾ Transcript, Vol. 32, p. 4683

⁽²⁾ Same, Vol. 85, p. 13006

⁽³⁾ Same, Vol. 32, p. 4669

⁽⁴⁾ Same, Vol. 32, p. 4669

The spokesman for the Industry Committee opposed permanent free entry under the B.P. Tariff. He said that if free entry were granted, it should apply only until the product was ruled to be made in Canada.⁽¹⁾ The Committee took the position that rates of 15 p.c., B.P. and 20 p.c., M.F.N., should apply to products made in Canada.

Potassium Permanganate

Potassium permanganate also is not made in Canada and is entered under an extract of tariff item 208t at rates of Free, B.P. and 15 p.c., M.F.N. It is used as a bleaching agent in wool, as a reagent for the control of peroxide bleach, as an oxidizing agent in dyeing and in other applications. The latest available data indicate imports in 1960 valued at about \$60,000. The Primary Textiles Institute reported an annual use by its members of about \$40,000.

The Institute proposed free entry for the chemical under both the B.P. and M.F.N. Tariffs until made in Canada; when so made the Institute supported rates of 15 p.c., B.P. and 20 p.c., M.F.N., for the product.⁽²⁾

The Consolidated Mining and Smelting Company of Canada Limited expressed an interest as a consumer of the chemical and urged that there be no increase in the rates for any chemical that would increase the costs of Canadian manufacturers.⁽³⁾

The Canadian Federation of Agriculture informed the Board that potassium permanganate is a constituent of some pesticides. The Federation urged free entry under all Tariffs for chemicals which are used in the manufacture of pesticides.⁽⁴⁾ When so used, chemicals may at present be entered under item 219a, free of duty under both the B.P. and M.F.N. Tariffs (when in packages weighing more than three pounds) or under item 791, also free of duty under the B.P. and M.F.N. Tariffs.

The Canadian Pharmaceutical Manufacturers Association listed potassium permanganate as one of the more important chemicals used by its members and recommended rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for, for products which are used in the manufacture of pharmaceuticals, while they are not made in Canada, and rates of 15 p.c., B.P. and 20 p.c., M.F.N., when they are made in Canada.⁽⁵⁾

Sodium Molybdate and Sodium Tungstate

The Canadian Color Makers Association expressed its interest in sodium molybdate to which it referred as an essential raw material for the production of molybdate orange and phospho-molybdic toners. Sodium molybdate is not made in Canada; in 1963, imports were valued at about \$110,000, with the indicated use by the Color Makers apparently accounting for about two-thirds of the total imported.⁽⁶⁾ The principal source of supply was said to be the U.K.

(1) Transcript, Vol. 32, p. 4670

(2) Same, Vol. 32, p. 4672, 4677

(3) Same, Vol. 5, p. 715

(4) Same, Vol. 110, p. 16631

(5) Same, Vol. 87, p. 13321

(6) Same, Vol. 32, p. 4730

The Association also indicated its interest in sodium tungstate, a basic raw material for the manufacture of phospho-tungstic acid toners. It also is not made in Canada and known imports in 1960 were valued at about \$14,500. The Color Makers Association reported that in 1958 the use by its members had a value at their plants of \$10,283 and in 1959 of \$12,202, suggesting that most Canadian use is by members of the Association.

Sodium molybdate and sodium tungstate are entered under item 208t, at rates of Free, B.P. and 15 p.c., M.F.N.

The Color Makers Association proposed that, until they are made in Canada, both sodium molybdate and sodium tungstate be entered free of duty under both the B.P. and M.F.N. Tariffs, when they are imported for use in the manufacture of synthetic pigments. When the products are made in Canada, the Association supported rates of up to 15 p.c., B.P. and 20 p.c., M.F.N. The spokesman indicated that these rates should be maxima.⁽¹⁾

Molybdenite Corporation of Canada Limited proposed that sodium molybdate be entered at the same rates as the company recommended for molybdenum oxide. At an earlier hearing, Molybdenite Corporation proposed a B.P. rate of 15 p.c. for molybdenum oxide; the company recommended an M.F.N. rate the equivalent of that in the U.S.A., namely 25 cents per pound, on the molybdenum content, plus $7\frac{1}{2}$ p.c. ad valorem. The proposal would result in an M.F.N. rate of approximately 20 p.c. The company gave as a reason for this proposal the fact that the process of converting the molybdenum oxide to the sodium molybdate was relatively simple.⁽²⁾ The color makers agreed that the process of conversion was not particularly complicated but their spokesman said their members

"have not considered that there is any economical advantage in going back to that basic stage, at least, at the present level of their consumption."⁽³⁾

The Canadian Federation of Agriculture expressed an interest in sodium molybdate as an ingredient of mixed fertilizers and urged free entry under both the B.P. and M.F.N. Tariffs, for chemicals so used.⁽⁴⁾ When imported for this purpose the chemical may be entered under tariff item 663b, free of duty under all Tariffs. Known imports of sodium molybdate were valued at about \$110,000 in 1963.

The Canadian Pharmaceutical Manufacturers Association listed sodium molybdate and sodium tungstate as chemicals of minor economic importance to its members. The Association recommended that, until they are made in Canada, chemicals used in the manufacture of pharmaceuticals should be entered at rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for.⁽⁵⁾

(1) Transcript, Vol. 32, p. 4731, 4733; Vol. 20, p. 2984-5
Vol. 93, p. 14209

(2) Same, Vol. 32, p. 4732; Vol. 19, p. 2804, 2810, Vol. 24, p. 3499

(3) Same, Vol. 32, p. 4733

(4) Same, Vol. 83, p. 12813

(5) Same, Vol. 87, p. 13278

Calcium Molybdate

In an earlier submission, Molybdenite Corporation of Canada Limited recommended that rates of 15 p.c., B.P. and the equivalent of 20 p.c., M.F.N. be applied to calcium molybdate and the elimination of end-use item 208g in so far as it relates to the product. Calcium molybdate is named in item 208g, duty-free when for use in the manufacture of steel under regulations prescribed by the Minister. Its use in the manufacture of steel is the principal use of calcium molybdate. The product may also be dutiable under item 208t, Free, B.P., 15 p.c., M.F.N. The product is discussed in more detail under heading 28.28, along with molybdenum oxide and hydroxide.

Other Chromium Compounds

British Chrome and Chemicals Canada Limited referred to its interest in four other chromium compounds, namely ammonium dichromate, potassium chromate, potassium dichromate and sodium chromate. Imports of potassium dichromate in 1963 were 448,000 pounds valued at \$80,190; known imports of the other three chemicals together were less than \$15,000 in 1960. All four are entered under item 208t with rates of Free, B.P. and 15 p.c., M.F.N. The company proposed that until made in Canada, they continue to be entered at the existing rates and indicated that it was "in full accord" with the rates proposed for an item worded like B.T.N. heading 28.47 (15 p.c., B.P. and 20 p.c., M.F.N.) when the products are ruled to be made in Canada.⁽¹⁾

The Canadian Federation of Agriculture listed potassium chromate as an ingredient of pesticides and recommended free entry under both the B.P. and M.F.N. Tariffs for chemicals so used.⁽²⁾

When imported as a pesticide, potassium chromate is entered under item 219a(1) (packages not exceeding three pounds in weight) at rates of Free, B.P. and 12½ p.c., M.F.N. and under item 219a(2) (packages exceeding three pounds in weight) with free entry under both the B.P. and M.F.N. Tariffs. When for use in the manufacture of pesticides, it is imported under end-use item 791, free of duty under both the B.P. and M.F.N. Tariffs.

The Canadian Pharmaceutical Manufacturers Association named ammonium molybdate, potassium dichromate and sodium chromate as chemicals of minor economic importance to its members. The Association proposed that until they are made in Canada, chemicals used in the manufacture of pharmaceuticals should be entered at rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for,⁽³⁾ the existing rates under tariff item 208t where they are now classified.

The Canadian Federation of Agriculture expressed an interest in ammonium molybdate as a constituent of fertilizers. The Federation proposed that chemicals used in the manufacture of fertilizers should be entered free of duty under both the B.P. and M.F.N. Tariffs, as under existing item 663b.⁽⁴⁾

(1) Transcript, Vol. 32, p. 4696

(2) Same, Vol. 110, p. 16631

(3) Same, Vol. 87, p. 13278

(4) Same, Vol. 83, p. 12813

No other representations were made to the Board related specifically to chemicals of B.T.N. heading 28.47. The Industry Committee proposed that all chemicals of this heading for which no other representations were made to the Board should be subject to rates of 15 p.c., B.P. and 20 p.c., M.F.N. This proposal would also apply to imports of other products for uses other than those specified in the end-use proposals catalogued above.

In general, the consumers who made representations for the chemicals dealt with in this section were interested in maintaining or acquiring low rates of duty for their raw materials. Although most agreed with the proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., when these chemicals are made in Canada, no one gave any indication why such rates might be appropriate specifically for the products in which he expressed an interest. In most cases, the imposition of such rates would affect the costs of the user's raw materials. For example, the color makers used terms such as "basic" and "essential" with reference to sodium molybdate and sodium tungstate, yet supported rates of 15 p.c., B.P. and 20 p.c., M.F.N. for them when they became available from Canadian production.

While the products are not made in Canada, most of the consumers generally proposed retention of the rates under item 208t (free, B.P. and 15 p.c., M.F.N.), or proposed free entry under both the B.P. and M.F.N. Tariffs.

OTHER SALTS AND PEROXYSALTS OF INORGANIC ACIDS,
BUT NOT INCLUDING AZIDES - B.T.N. 28.48

The public hearing on heading 28.48 of the B.T.N. was held in February 1961. None of the chemicals which were then classified under the heading appears to have notable economic importance in Canada. However, subsequent to the hearings, the Brussels Tariff Nomenclature relating to heading 28.48 was amended to include double and/or complex salts, with certain specific exclusions. The exclusions pertain to the complex fluorine salts (heading 28.29), alums (heading 28.38) and complex cyanides (heading 28.43).

As a result of the amendments some chemicals which had been dealt with at the hearings under other headings of the B.T.N., were reclassified under heading 28.48. Of these, only zinc ammonium chloride appears to have economic significance. The products which were the subject of representations and were classified under a heading other than 28.48 at the time of the public hearings are listed below, together with the B.T.N. heading under which they were formerly classified.

<u>Former Heading</u>	<u>Product</u>
28.30	Ammonium ferric chloride Zinc ammonium chloride
28.38	Magnesium sulphate - potassium sulphate containing more than 30% by weight of K ₂ O in the dry state
28.40	Magnesium sodium phosphate

Five other products of heading 28.48 were also the subject of specific representations; these were:

ammonium sulphamate
copper oxychloride sulphate
sodium dithionate
sodium phosphoaluminate
zinc thiophosphate

In addition, Diversey Corporation Canada Limited submitted a brief regarding trisodium phosphate chlorinated which the company markets under the brand name of "Diversol". The company felt that this product would be classified under B.T.N. heading 28.48. However, further information indicates that "Diversol" is a mixture that likely would be classified either under heading 38.11 as a disinfectant preparation, or possibly under miscellaneous preparations of heading 38.19. The product is dealt with under heading 38.11.

For eight of the nine products above, which are classified under heading 28.48, there are practically no data available. The discussion of these is followed by that on zinc ammonium chloride.

A group of seven manufacturers of pesticides proposed that chemicals which are not made in Canada and are used in the manufacture of pesticides be entered free of duty under both the B.P. and M.F.N. Tariffs.(1) They listed ammonium sulphamate and copper oxychloride sulphate of heading 28.48 as chemicals so used. The manufacturers informed the Board that, at the time of the hearing, they were importing these chemicals under items 219a(1) and 791. Under item 219a(1) the rates are Free, B.P. and 12½ p.c., M.F.N. If these chemicals were in packages exceeding three pounds each, gross weight, they would be entered under item 219a(2), free of duty under both the B.P. and M.F.N. Tariffs. Under end-use item 791 entry is free under all Tariffs.

Ammonium sulphamate was also the subject of representations by the Canadian Pulp and Paper Association,(2) the Canadian Pharmaceutical Manufacturers Association(3) and the Canadian Federation of Agriculture.(4) The pharmaceutical manufacturers recommended rates of Free, B.P. and 15 p.c., M.F.N.; the others were either opposed to an increase in the rates or recommended free entry for ammonium sulphamate.

The Canadian Pharmaceutical Manufacturers Association proposed that chemicals which are not made in Canada and are not otherwise provided for should be entered at rates of Free, B.P. and 15 p.c., M.F.N., when for use in the manufacture of pharmaceuticals.(5) The Association, in addition to ammonium sulphamate noted above, listed sodium dithionate, magnesium sodium phosphate and ammonium ferric chloride, as chemicals so used.

The Canadian Pulp and Paper Association said it was opposed to any increase in the rates of duty for chemicals used by its members(6) and listed sodium phosphoaluminate as being subject to these representations.

Lubrizol of Canada Limited informed the Board that it imported zinc thiophosphate for use in the manufacture of additives for heating, lubricating and fuel oils under item 220e, at rates of Free, B.P. and 5 p.c., M.F.N. The company proposed that the provisions of temporary end-use item 220e be made permanent.(7)

The Canadian Federation of Agriculture expressed an interest in potassium-magnesia sulphate, as a constituent of fertilizers. Presumably this material is that designated as magnesium sulphate-potassium sulphate in the B.T.N. The product which enters trade in North America and is used in fertilizers contains about 22 per cent of potassium oxide and would therefore be classified with potassic fertilizers in heading 31.04. It is discussed under that heading with other fertilizer materials. The product is not known to be used for any other purpose.

(1) Transcript, Vol. 108, p. 16332

(2) Same, Vol. 85, p. 13006

(3) Same, Vol. 87, p. 13321

(4) Same, Vol. 110, p. 16631

(5) Same, Vol. 87, p. 13321

(6) Same, Vol. 85, p. 13006

(7) Same, Vol. 112, p. 16826

All other chemicals that are classified under the heading would be subject to the proposal of the Industry Committee that all products for which no other proposals were received by the Board should be dutiable at rates of 15 p.c., B.P. and 20 p.c., M.F.N., as proposed by the Committee for the heading.⁽¹⁾

In general the support for the proposals either for low rates or for free entry, under various end-use items, was based on the higher costs that might result if the rates were increased, either by elimination of the end-use items or by proposals which would otherwise increase the rates at which the chemicals are now entered. The Industry Committee did not indicate why its proposal of rates of 15 p.c., B.P. and 20 p.c., M.F.N. was appropriate specifically as the residual provision for products of heading 28.48.

ZINC AMMONIUM CHLORIDE

Zinc ammonium chloride is a deliquescent, crystalline, double salt of zinc chloride and ammonium chloride. The reaction between zinc chloride and ammonium chloride can be controlled to produce either a "double" or a "triple" ratio salt. The only significant use of both chemicals is in galvanizing steel. The use of either the triple salt or the solution form of the double salt requires the provision of storage tanks at the steel plant site; the use of the anhydrous form of the double salt does not require such storage facilities.

Zinc ammonium chloride is produced in Canada by one company, Canadian Industries Limited, at Hamilton, Ontario. C.I.L. produces only the triple ratio salt. The company spokesman said it could also produce the double ratio, but only in solution. The plant at Hamilton is also the only one in Canada that manufactures ammonium chloride and zinc chloride, the raw materials.

At the public hearing in January 1961, the spokesman for C.I.L. said that the Canadian market uses appreciably less than 1000 tons per annum, of zinc ammonium chloride.⁽²⁾ In addition to the captive use by C.I.L. at Hamilton, "the two major users ... are both located in Hamilton and one of them uses the two ratio salt and the other the three ratio salt ..."⁽³⁾ The principal consumer of the double ratio material was said to lack the space which would be required to provide storage facilities for this product in solution. Less than five per cent of the market was estimated to be outside Ontario and Quebec.

Imports, all of the double ratio salt, were 337 tons in 1960. By 1963, the last year for which figures are available, they had fallen to 240 tons. The U.K., Belgium and Luxembourg and the U.S.A. were the only suppliers in 1962 and 1963. Imports were said to be principally of the anhydrous form. The laid-down price of the imported salt was given as about \$12 per hundredweight compared with \$9 for the triple salt sold by C.I.L. Thus, the indicated value of the commercial market is approximately \$200,000 annually.

⁽¹⁾ Transcript, Vol. 32, p. 4735

⁽²⁾ Same, Vol. 22, p. 3156

⁽³⁾ Same, Vol. 22, p. 3161

The company spokesman said that he believed the two salts to be completely substitutable for each other. However, he reported that the steel company that imported the double salt claimed that the double salt gave superior results in its galvanizing operations.⁽¹⁾ His information would also suggest that the importer "does not have space to locate storage tanks to handle the three ratio material."⁽²⁾ The C.I.L. plant is able to produce the double salt in solution but additional equipment would have to be installed to make the anhydrous form. The company did not consider that the potential sales justified such action.

Tariff Considerations

Zinc ammonium chloride is entered under item 711 at 15 p.c., B.P. and 20 p.c., M.F.N. C.I.L. proposed that these rates be continued.⁽³⁾ No other representations were made to the Board which related specifically to the product.

In support of these rates the C.I.L. spokesman said:

"The Customs Tariff on zinc ammonium chloride has been used to secure maximum sales rather than to realize the highest prices obtainable. Such use of the tariff involves maximum utilization of Canadian labour and resources at minimum cost to the user. In the circumstances, there would appear to be no case for reducing the level of duty.

"While it is true that the two ratio material is not available from Canadian production, this product is competitive with three ratio material and the existence of duty tends to favour use of the three ratio material."⁽⁴⁾

At the time of the hearing, C.I.L.'s price was \$9 a hundredweight compared with \$12 a hundredweight for the imported material, 33 1/3 per cent more. Lack of storage facilities at its site and preference for the double salt by the major importer because of superior results were cited as the reasons for most imports.

(1) Transcript, Vol. 22, p. 3158

(2) Same, Vol. 22, p. 3163

(3) Same, Vol. 22, p. 3155

(4) Same, Vol. 22, p. 3156

COLLOIDAL PRECIOUS METALS; AMALGAMS OF PRECIOUS
METALS; SALTS AND OTHER COMPOUNDS, INORGANIC OR
ORGANIC, OF PRECIOUS METALS .../ETC./ - B.T.N. 28.49

Heading 28.49 of the Brussels Tariff Nomenclature includes a large number of chemicals, some examples of which are given below:

colloidal silver	silver cyanide
colloidal gold	aurous oxide
colloidal platinum	gold cyanide
platinum phosphide	osmium tetroxide
silver azide	palladous chloride
silver oxide	rhodium oxide
silver nitrate	ruthenium trichloride

The spokesman for the Industry Committee estimated that imports of products of heading 28.49 would be valued at \$40,000 to \$50,000 annually. Few, if any, of the chemicals appear to be available from Canadian production.

Representations were made to the Board by the Canadian Pharmaceutical Manufacturers Association respecting the following chemicals of heading 28.49: auric bromide, platinum oxide, silver nitrate and silver protein compounds. The Association proposed that chemicals not made in Canada, and otherwise not provided for, should be entered at rates of Free, B.P. and 15 p.c., M.F.N., if they are to be used in the manufacture of pharmaceuticals.⁽¹⁾ The Association did not indicate why these rates would be appropriate specifically for the chemicals of heading 28.49.

No other representations were placed on record dealing with specific chemicals of heading 28.49. The Industry Committee proposed that all products of B.T.N. 28.49 which were not subject to other proposals should be dutiable at rates of 15 p.c., B.P. and 20 p.c., M.F.N. This proposal would apply to the chemicals listed by the pharmaceutical manufacturers if imported for uses other than the manufacture of pharmaceuticals. The Committee did not indicate why the rates it proposed would be appropriate specifically to the chemicals of heading 28.49.

⁽¹⁾ Transcript, Vol. 87, p. 13321

FISSILE CHEMICAL ELEMENTS AND ISOTOPES; OTHER RADIO-ACTIVE CHEMICAL
ELEMENTS AND RADIC-ACTIVE ISOTOPES; COMPOUNDS, INORGANIC OR ORGANIC,
OF SUCH ELEMENTS OR ISOTOPES, WHETHER OR NOT CHEMICALLY DEFINED;
ALLOYS, DISPERSIONS AND CERMETS, CONTAINING ANY OF THESE ELEMENTS,
ISOTOPES OR COMPOUNDS - B.T.N. 28.50

AND

ISOTOPES AND THEIR COMPOUNDS, INORGANIC OR ORGANIC, WHETHER OR NOT
CHEMICALLY DEFINED, OTHER THAN ISOTOPES AND COMPOUNDS FALLING WITHIN
HEADING NO. 28.50 - B.T.N. 28.51

At the public hearing in March 1961, only one company, Merck Sharp and Dohme of Canada Limited, made representations to the Board regarding the products classified by headings 28.50 and 28.51 of the B.T.N. Since 1956, the company has produced and sold organic and inorganic compounds "labelled" with isotopes. The company reported that in 1960, its sales of such products were approximately \$250,000, with Canada and the U.S.A. the principal markets. About 70 per cent of the sales were for export.

The spokesman said the Canadian company was the world's largest supplier of labelled compounds. The only other producer of such products in Canada was said to be Atomic Energy of Canada Limited which makes carbon 14 and tritium labelled compounds. This production does not appear to be on a commercial scale. Neither company manufactured the isotopes.

With the principal exception of deuterium, deuterium oxide and radium, many of the products classified under headings 28.50 and 28.51 are entered under tariff item 237, free of duty under both the B.P. and M.F.N. Tariffs, though some may be dutiable at 15 p.c., M.F.N. under tariff item 216 or at 15 p.c., B.P., 20 p.c., M.F.N., as chemical preparations under tariff item 220a(i). Radium, classified under heading 28.50 of the B.T.N., is entered under item 333 free of duty under the B.P. and M.F.N. Tariffs, while deuterium oxide (heading 28.51) is entered free of duty under item 237a. Deuterium is entered under item 208t at Free, B.P., 15 p.c., M.F.N. Tariff items 237a and 333 are not part of Reference 120.

The Industry Committee urged that radium be removed from item 333 and relocated, without any change in the existing rates, under an item worded like heading 28.50 of the B.T.N. This was recommended in order to maintain intact, as far as possible, the classification of chemicals of the Brussels Nomenclature. The Committee also recommended that deuterium and deuterium oxide be relocated, without change in the existing rates, under an item like heading 28.51 of the B.T.N.⁽¹⁾

Merck Sharp and Dohme urged that the products classified under headings 28.50 and 28.51 of the B.T.N. should be entered free of duty under both the B.P. and M.F.N. Tariffs.⁽²⁾

At a later hearing, Eldorado Mining and Refining Limited proposed that natural, enriched and depleted uranium metal, salts,

(1) Transcript, Vol. 3, p. 422

(2) Same, Vol. 33, p. 4755

compounds and gases continue to be entered free of duty under both the B.P. and M.F.N. Tariffs.⁽¹⁾ Enriched uranium metal, salts and compounds are ordinarily classified under heading 28.50 of the B.T.N. and under tariff item 237 of the Canadian Customs Tariff; natural uranium is classified under heading 28.50 and tariff item 237a. Depleted uranium salts or compounds are classified under heading 28.52 and under tariff items 208t and 68ld. Item 68ld is in Reference 120 in so far as it relates to chemicals. It provides duty-free entry for residues from the processing abroad of uranium metal, salts or oxides of Canadian origin for use in Canadian manufactures.

No other representations were made to the Board relating specifically to products classified under headings 28.50 and 28.51 of the B.T.N.

From the above, it appears that most of the products of headings 28.50 and 28.51 of significant commercial value are currently entered free of duty under both the B.P. and M.F.N. Tariffs, under tariff items 237, 237a, 333 and 68ld. All of the representations regarding these products were for continued free entry under the B.P. and M.F.N. Tariffs. The request for relocation of deuterium oxide from tariff item 237a and of radium from item 333 would not affect their present duty-free status. The proposal for duty-free entry would result in reductions in rates of duty for products now classified under tariff items 208t, 216 and 220a. The available data suggest that these have little commercial importance.

In support of free entry for the products of headings 28.50 and 28.51, the spokesman for Merck Sharp and Dohme emphasized the use of labelled products for research and the benefits resulting from research. He said:

"We are not able to supply all the requirements of Canadian research workers, and it should not be made more expensive for them to purchase these compounds elsewhere if they so desire and conversely we wish to sell our products freely throughout the world without duty restrictions ... We feel that the end result of yet another restriction and burden -- duty -- will only be to slow the progress of research and its resulting benefits to all."⁽²⁾

(1) Transcript, Vol. 90, p. 13680

(2) Same, Vol. 33, p. 4756

COMPOUNDS, INORGANIC OR ORGANIC, OF THORIUM, OF URANIUM
DEPLETED IN U235, OF RARE EARTH METALS, OF YTTRIUM
OR OF SCANDIUM, WHETHER OR NOT MIXED TOGETHER
B.T.N. 28.52

INTRODUCTION

The Explanatory Notes to B.T.N. heading 28.52 state that:

"This heading covers the inorganic and organic compounds of thorium and of uranium depleted in U235, of yttrium, of scandium and of the rare earth metals of heading 28.05 (lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium), whether or not mixed together."⁽¹⁾

This wording differs somewhat from that at the time of the public hearing but the differences are unlikely to have material effect on the representations before the Board.

Although heading 28.52 of the Brussels Tariff Nomenclature relates to a large number of products, few are of significant commercial importance in Canada. At the public hearing in March 1961, and at later hearings in 1962, the following chemicals or mixtures were mentioned:

cerium compounds	rare earth oxide
ceric sulphate	thorium fluoride
depleted uranium salts	thorium nitrate
or compounds	thorium oxalate
didymium fluoride	thorium oxide
didymium oxide	thorium sulphate
rare earth fluoride	

At the time of the public hearing, in 1961, only depleted uranium compounds, thorium oxide, thorium oxalate, thorium sulphate and thorium sludge were known to be manufactured in Canada. Depleted uranium compounds were produced by Eldorado Mining and Refining Limited and thorium compounds by Rio Tinto Dow Limited. Rio Tinto Dow informed the Board that it expected to begin production of rare earths in 1962 and that it could produce rare earth fluoride and nitrate if there were sufficient market for these.

THORIUM OXIDE

Rio Tinto Dow operates two plants near Elliott Lake, Ontario, one at Quirke Lake and the other at Nordic. The former produces only the more refined materials; the latter produces both the sludge, a concentrate of thorium sulphate, and refined products such as thorium dioxide. Some of the sludge is refined at Quirke Lake.

⁽¹⁾ Amendments to the Explanatory Notes ... Corrigendum No. 18, p. 29

The raw material for the production of sludge is uranium-treatment plant waste. The Department of Mines and Technical Surveys reports that this waste

"is usually discarded in the mine-tailings dumps and is then not economically recoverable. The solution contains about a pound of thorium and about half a pound of rare earths to a thousand gallons. The process, primarily chemical, consists of extracting the thorium from the waste liquor of the uranium circuits ... followed by precipitating and thickening the thorium product. The thorium sludge is then filtered and dried, giving a crude product of about 20 per cent ThO_2 [thorium dioxide].

"About 30 per cent of the cake is further refined to metallurgical-grade thorium oxide ($99.8 + \% \text{ThO}_2$) at the Quirke plant...

"The rare earths--ytterbium, thulium, erbium, europium, holmium, dysprosium, terbium, gadolinium, neodymium, praseodymium, lanthanum and particularly yttrium -- are also contained in the Elliott Lake ores and if market conditions warranted, could be recovered with thorium from the effluent of the uranium-treatment plants in the proportion of one pound to every three or four pounds of thorium".(1)

The spokesman for Rio Tinto Dow said that the company's business is concerned primarily with thorium oxide and sludge. The principal use of the oxide is for the production of thorium metal for alloying with magnesium. Of the three major consumers in the world, "Dominion Magnesium [at Haley Station, Ontario] is by far the most important".(2) The sludge competes with thorite and monazite, two naturally-occurring thorium minerals. Because of its higher concentration of thorium, the sludge has advantages over the natural materials.

The Department of Mines states that:

"the Canadian producer has captured a large share of the world thorium market formerly held by monazite sand producers ... Most of the thorium produced in Canada is shipped to the United States and Britain in the form of concentrates".(3)

The spokesman for Rio Tinto Dow said his company supplied 100 per cent or nearly 100 per cent of the Canadian market for the oxide.

Sludge from Canada is entered into the U.S.A. at a rate of 15 p.c., and into the U.K., free of duty.

(1) The Canadian Minerals Yearbook, 1963, Thorium

(2) Transcript, Vol. 33, p. 4866

(3) The Canadian Minerals Yearbook, 1963, Thorium

OTHER PRODUCTS OF HEADING 28.52

Little information is available regarding other products of heading 28.52. Eldorado Mining and Refining Limited produces depleted uranium products but there is no public information available regarding the extent of these operations.

The other products, in which some interest was expressed to the Board, were not made in Canada at the time of the hearing in 1961. Ceric sulphate was said to be used in the manufacture of cerium driers which are used in paints, varnishes, printing inks and floor coverings. The other four products which were mentioned, didymium oxide, didymium fluoride, rare earth oxide and rare earth fluoride were said to be used in the production of electric arc carbons for movie projectors, search-lights, treatment lamps and similar devices. The extent of the Canadian market for these products is not known.

Tariff Considerations

The products, listed above as those in which an interest was expressed to the Board, would be classified under heading 28.52 of the B.T.N.

In the Canadian Customs Tariff the single chemicals are classified under tariff item 208t, if not made in Canada and under tariff item 711 if ruled to be made in Canada. This would also apply to products such as didymium fluoride and rare earth fluoride, which are considered to be single chemicals in the administration of the Customs Tariff.

Bases or salts of thorium or of cerium, such as ceric sulphate, thorium fluoride and others could be entered free of duty under item 621, when imported for use in the manufacture of incandescent gas mantles or their stockings. This item is not in Reference 120. Compounds of depleted uranium, if they are "residues resulting from the processing abroad of uranium metal, salts or oxides of Canadian origin, for use in Canadian manufactures" can be entered free of duty under item 681d.

The tariff items which might apply to the products in which an interest was expressed are shown below together with the probable existing rates of duty. Other items might also apply for particular end-uses.

<u>Product</u>	<u>Tariff Item</u>	<u>Existing Rates</u>	
		<u>B.P.</u>	<u>M.F.N.</u>
cerium compounds (generally)	208t	Free	15 p.c.
ceric sulphate	208t	Free	15 p.c.
depleted uranium salts			
of Canadian origin	681d	Free	Free
of foreign origin	208t	Free	15 p.c.
didymium fluoride	208t	Free	15 p.c.
didymium oxide	208t	Free	15 p.c.
rare earth fluoride	208t	Free	15 p.c.
rare earth oxide	208t	Free	15 p.c.
thorium fluoride	208t	Free	15 p.c.

<u>Product</u>	<u>Tariff Item</u>	<u>Existing Rates</u>	
		<u>B.P.</u>	<u>M.F.N.</u>
thorium nitrate	208t	Free	15 p.c.
thorium oxalate	208t	Free	15 p.c.
thorium oxide	711	15 p.c.	20 p.c.
thorium sulphate	208t	Free	15 p.c.
salts of thorium and cerium for use in gas mantles	621	Free	Free

At the public hearing in March 1961, Rio Tinto Dow Limited proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N., for thorium oxide and thorium salts.⁽¹⁾ Except for thorium oxide which is now entered at 15 p.c., B.P. and 20 p.c., M.F.N., most thorium salts would be entered at rates of Free, B.P. and 15 p.c., M.F.N.

Union Carbide Canada Limited urged that, until they are made in Canada, rare earth oxides and fluorides be entered free of duty under both the B.P. and M.F.N. Tariffs, in an item worded like heading 28.52 of the Brussels Tariff Nomenclature.⁽²⁾ The spokesman for the company did not indicate what rates should apply when the products are ruled to be made in Canada.

Nuodex Products of Canada Limited proposed free entry for ceric sulphate until it is made in Canada under both the B.P. and M.F.N. Tariffs in an item worded like heading 28.52 of the B.T.N.⁽³⁾ The company's brief did not indicate what rates should apply when the product is made in Canada.

Eldorado Mining and Refining Limited recommended free entry under both the B.P. and M.F.N. Tariffs for depleted uranium salts and compounds.⁽⁴⁾

The Canadian Pharmaceutical Manufacturers Association proposed that chemicals not made in Canada which are used in the manufacture of pharmaceuticals be entered at rates of Free, B.P. and 15 p.c., M.F.N., unless otherwise provided for.⁽⁵⁾ The Association included cerium compounds in a list of chemicals of relatively little economic interest to its members.

The Industry Committee took the position that all chemical products of heading 28.52, for which no other proposals were made to the Board, should be dutiable at the rates recommended by it for the heading, namely 15 p.c., B.P. and 20 p.c., M.F.N.⁽⁶⁾

Thus, there were the following recommendations before the Board:

(1) Transcript, Vol. 33, p. 4865

(2) Same, Vol. 33, p. 4780

(3) Same, Vol. 33, p. 4777

(4) Same, Vol. 90, p. 13680

(5) Same, Vol. 87, p. 13321

(6) Same, Vol. 33, p. 4773

<u>Product</u>	<u>Existing Rates</u>		<u>Proposed Rates</u> ^(a)		<u>Proposed By</u>
	<u>B.P.</u>	<u>M.F.N.</u>	<u>B.P.</u>	<u>M.F.N.</u>	
Cerium compounds	Free	15 p.c.	Free	15 p.c.	Pharm. Ass'n.
Ceric sulphate	Free	15 p.c.	Free	Free	Nuodex
Thorium compounds	Free	15 p.c.	15 p.c.	20 p.c.	Rio Tinto Dow
Thorium oxide	15 p.c.	20 p.c.	15 p.c.	20 p.c.	Rio Tinto Dow
Didymium compounds	Free	15 p.c.	Free	Free	Union Carbide
Rare earth compounds	Free	15 p.c.	Free	Free	Union Carbide
Uranium compounds	Free	15 p.c.	Free	Free	Eldorado
All others	Free	15 p.c.	15 p.c.	20 p.c.	Ind. Comm.

(a) Except for "thorium compounds," the rates were to apply only until the products are ruled to be made in Canada

Rio Tinto Dow Limited claimed that the U.S.A. was the major market in the world for thorium oxide and thorium salts but that high duties prevented entry of these Canadian products into the U.S.A. The spokesman for the company said:

"Canadian produced thorium and uranium products can be fully competitive and would not need protection in free world markets. The fact that other countries, particularly the U.S. imposes high rates of duty on finished thorium products protects U.S. producers in the larger U.S. market, leaving them capable of competing on an incremental basis with Canadian production for the Canadian market. Moderate duty rates would reserve the Canadian market for Canadian producers... From this base, Canadian production can compete in world markets where duty rates of other countries are not excessive".⁽¹⁾

The available evidence indicates that at the time of the hearing, Rio Tinto Dow was supplying all of the Canadian market for products which the company produced. The evidence also shows that in the few years that the company has been in production it has become the principal world supplier of thorium compounds. The United States Department of the Interior reports that:

"Crude thorium sulfate cake, processed from uranium-mill waste liquors by Rio Tinto Dow, Ltd. since 1959, competed successfully, after refinement, with concentrates of thorite and monazite. Much of the world market for thorium was supplied by the new extraction plant at Rio Algom's Nordic mill near Elliott Lake, Ontario."⁽²⁾

In view of the above it is difficult to see how the competitive position of the company would be improved by the imposition of duties for entry into Canada. The company's position apparently would benefit more from reduction of duties on the product going into the U.S.A.

(1) Transcript, Vol. 33, p. 4867

(2) U.S. Dept. of the Interior, Minerals Yearbook, 1962, Thorium, p. 1202

According to the information given at the public hearing by the company, "Only three significant customers for thorium oxide are in existence in the world at the present time. ... Of these Dominion Magnesium at Haley Station, Ontario is by far the most important."⁽¹⁾ Rio Tinto Dow appears to be in an advantageous position to continue to supply Dominion Magnesium. Haley Station, Ontario, is a considerable distance from even the nearest potential suppliers in the U.S.A. Moreover, Rio Tinto Dow has an advantage in that it uses its own concentrates to produce the metallurgical-grade thorium dioxide that it supplies to Dominion Magnesium. Potential competitors in the U.S.A. would likely buy the concentrate from Rio Tinto Dow and pay the cost of transporting it from northern Ontario to their plant site. Thus, the Canadian producer has an advantage from the use of its own raw material and a further advantage from the much lower costs of transportation.

The others who expressed an interest to the Board in products of heading 28.52 included one producer, Eldorado Mining and Refining Limited and a group of consumers, including Nuodex, Union Carbide and the pharmaceutical manufacturers.

It was stated in the Eldorado brief:

"It is our view that natural, enriched and depleted uranium in the form of metal, salts, compounds or gases be allowed to enter Canada duty-free ...

"We believe that all forms of enriched and depleted uranium should be allowed free entry ...

"The free entry of depleted uranium will result in cheaper alloys and heavy metal products."⁽²⁾

The consumers who made representations to the Board for free entry for products of B.T.N. heading 28.52 based their arguments on the effect of tariffs on their costs.

These parties generally referred to the fact that the products which they used in their manufacturing processes were not available from Canadian production and therefore conferred no benefits on Canadian producers. They also claimed that the effect of rates other than free entry would affect their costs and make them less competitive where products of heading 28.52 entered into the cost of production of other goods.

The Industry Committee did not indicate why its recommendation for rates of 15 p.c., B.P. and 20 p.c., M.F.N. were appropriate specifically for products of heading 28.52; it did urge that any exceptional treatment by way of free entry be the subject of a clearly defined list or category. It is noteworthy that the consumers qualified their proposals to apply only while the various products were ruled not to be made in Canada. None of the parties who so qualified their proposals gave any indication why other rates would be more appropriate when the products were ruled to be made in Canada.

⁽¹⁾ Transcript, Vol. 33, p. 4866

⁽²⁾ Same, Vol. 90, p. 13680

It should be noted that tariff item 68ld would apply to at least some products of heading 28.52. The item is as follows:
"Residues resulting from the processing abroad of uranium metal, salts or oxides of Canadian origin, for use in Canadian manufactures", and provides for free entry under both the B.P. and M.F.N. Tariffs.

Item 68ld is within the terms of Reference 120 only insofar as it relates to chemicals. It is possible that some products that would be classified under this item would not be defined as chemicals for tariff purposes. There might be some difference in the present interpretation for Canadian Customs purposes and classification under the B.T.N. If the recommendation of Eldorado for free entry of depleted uranium products were implemented it would be possible to delete item 68ld except insofar as it applies to products other than chemicals.

LIQUID AIR (WHETHER OR NOT RARE GASES HAVE BEEN
REMOVED); COMPRESSED AIR - B.T.N. 28.53

At the public hearing in March 1961, an industry spokesman stated that neither liquid air nor compressed air was an article of commerce either in Canada or the U.S.A.⁽¹⁾ The small quantities that are used mainly in laboratories are produced as needed. Liquid air is of considerable importance only as the intermediate material from which the individual atmospheric gases are separated in the process of fractional distillation. Compressed air is usually produced on site as needed.

Liquid air and compressed air are dutiable as unenumerated articles under tariff item 711 at rates of 15 p.c., B.P., 20 p.c., M.F.N. The Industry Committee urged that the products be classified under a tariff item worded like B.T.N. heading 28.53, as in the heading above. By the Committee's proposal, liquid air and compressed air would be dutiable at the rates proposed for heading 28.53, namely 15 p.c., B.P., 20 p.c., M.F.N.

Linde Gases Division of Union Carbide Canada Limited claimed that there would be difficulties in visually distinguishing liquid air from the individual atmospheric gases, and requested rates of 15 p.c., B.P., 20 p.c., M.F.N., "on the basis of an insurance policy to make sure that liquid oxygen, liquid argon and liquid nitrogen are not entered into Canada as liquid air at a lower rate of duty."⁽²⁾ Whatever the merits of these rates of duty, the inadequacies of visual inspection to prevent illegal entry could be overcome by the use of other tests.

HYDROGEN PEROXIDE (INCLUDING SOLID HYDROGEN PEROXIDE)
B.T.N. 28.54

Hydrogen peroxide finds its main uses as a bleach for pulp and paper, textiles and other materials. In its principal applications, it is substitutable for and competitive with sodium peroxide. At the hearings on sodium peroxide and hydrogen peroxide, considerable emphasis was placed on the competition between these two products. In view of this, hydrogen peroxide is dealt with immediately following the discussion of sodium peroxide in heading 28.17.

⁽¹⁾ Transcript, Vol. 33, p. 4886

⁽²⁾ Same, Vol. 33, p. 4890

PHOSPHIDES - B.T.N. 28.55

Phosphides are, economically, a relatively unimportant group of chemicals in Canada and only four chemicals of the group were brought to the attention of the Board. Two of these, calcium phosphide and aluminum magnesium phosphide are used in marine and aerial flares and another, zinc phosphide, was reported to be used in the manufacture of pharmaceuticals and pesticides. The fourth, iron phosphide (ferrophosphorus), is used mainly in the production of steel and, more recently, in nuclear shielding.

Calcium phosphide and aluminum magnesium phosphide are not made in Canada and are imported by one company for the manufacture of flares mainly for the use of the armed services. No public data are available regarding the extent of these imports. The only source of the chemicals, since 1955, was said to be one supplier in the U.K. It is not available in the U.S.A. and the Canadian market was said to be too small to warrant production. There are no known substitutes for these chemicals in the flares in which they are used.

Ferrophosphorus is produced in Canada by one company, Electric Reduction Company of Canada (Erco), at Buckingham, Quebec. It is a by-product of the manufacture of elemental phosphorus. The ferrophosphorus produced in Canada and the U.S.A. contains about 25 per cent phosphorus and would be classified under heading 28.55 of the B.T.N.

The principal use of ferrophosphorus has been in the production of steel. However, the spokesman for Erco said a relatively new use for the material is in shielding in nuclear applications. This use could, in the future, account for a much greater utilization of ferrophosphorus than the 250 tons annually that was estimated to be used in the production of steel.

The spokesman for Erco said his company supplied all of the Canadian use of the product and exported relatively small amounts occasionally. Costs of freight to foreign markets, for the small shipments made by Erco, were cited as a limitation on the extent of the company's foreign trade.

Tariff Considerations

Aluminum magnesium phosphide, calcium phosphide and zinc phosphide are entered under tariff item 208p, "phosphorus and compounds thereof, n.o.p.", with rates of Free, B.P. and 20 p.c., M.F.N. Zinc phosphide is also entered under tariff item 791, free of duty under both the B.P. and M.F.N. Tariffs, when for use in the manufacture of pesticides. Iron phosphide (ferrophosphorus) has been entered only under item 375f, up to the present time, at rates of Free, B.P. and 5 p.c., M.F.N. Item 375f, which is outside the terms of Reference 120, applies to ferrophosphorus if for use in the manufacture of steel or iron. It is understood that the Department of National Revenue has never had occasion to rule on ferrophosphorus imported for any other purpose; the product would otherwise be deemed to be a phosphorus compound, under item 208p to be entered at rates of Free, B.P., 20 p.c., M.F.N., or an unenumerated product under item 711 with rates of 15 p.c., B.P. and 20 p.c., M.F.N.

At the public hearing, in March 1961, Electric Reduction Company of Canada proposed that, until they are ruled to be made in Canada, aluminum magnesium phosphide and calcium phosphide be classified under an item worded like heading 28.55 of the B.T.N., with rates of Free, B.P. and 15 p.c., M.F.N.; when so ruled, rates of 15 p.c., B.P. and 20 p.c., M.F.N. should apply.⁽¹⁾ The company also proposed that iron phosphide should be similarly classified and also be subject to rates of Free, B.P. and 15 p.c., M.F.N.

These proposals would involve no change in the B.P. rate from that of item 208p, but a reduction from 20 p.c. to 15 p.c. in the M.F.N. rate. However, under item 375f, under which all imports of ferrophosphorus have been entered, the M.F.N. rate is 5 p.c. and because the proposal of Erco would remove ferrophosphorus from inclusion in this item, it would increase the effective M.F.N. rate from 5 p.c. to 15 p.c., for ferrophosphorus used in steel and iron.

The Canadian Federation of Agriculture urged that chemicals used in the manufacture of pesticides should be entered free of duty, under both the B.P. and M.F.N. Tariffs.⁽²⁾ The Federation listed zinc phosphide as a chemical of heading 28.55 used for such a purpose.

The Canadian Pharmaceutical Manufacturers Association recommended that, while they are not made in Canada, chemicals used in the manufacture of pharmaceuticals and not otherwise provided for should be entered at rates of Free, B.P. and 15 p.c., M.F.N.⁽³⁾ The Association listed zinc phosphide as a relatively unimportant chemical, economically, that was so used by its members.

The Industry Committee urged that all products of heading 28.55 which were not the subject of recommendations by others should be entered under an item worded like heading 28.55 of the B.T.N., at rates of 15 p.c., B.P. and 20 p.c., M.F.N.

In support of his company's recommendations for aluminum magnesium phosphide and calcium phosphide, the Erco spokesman said that this was in keeping with the company's policy of recommending lower rates than for the heading (15 p.c., B.P. and 20 p.c., M.F.N.) for products not made in Canada. He also suggested that the 15 p.c. margin of preference was equitable.

In answer to questions by members of the Board relating to calcium phosphide he said, "We see no possibility of importations from the U.K. being stimulated ... and the material has not been produced in the United States in recent years ..." He added later, "I do not believe the volume required is sufficient to warrant setting up manufacturing in the United States ..."⁽⁴⁾

Although Erco produced calcium phosphide during World War II, at the time of the hearing the company was not a producer, a consumer or a distributor of aluminum magnesium phosphide or calcium phosphide.

(1) Transcript, Vol. 34, p. 4897

(2) Same, Vol. 110, p. 16631

(3) Same, Vol. 87, p. 13321

(4) Same, Vol. 34, p. 4900

Erco supported its recommendation for iron phosphide on the grounds that a duty of 15 p.c., M.F.N. would act "as a deterrent against the possible erosion of the Canadian market by importation."⁽¹⁾ However, the spokesman for Erco, in answer to questions, admitted that even with the existing M.F.N. rate of 5 p.c. the company held virtually all of the Canadian market. In the one year that imports had been a factor it was due to a change in the specifications of the Canadian product. When the specifications were altered to what they had been previously, imports stopped.

Considerable discussion occurred at the hearing regarding the classification of iron phosphide or ferrophosphorus. In the B.T.N. it is classified under heading 28.55 only if it contains 15 per cent or more by weight of phosphorus. The ferrophosphorus produced in Canada and in the U.S.A. was said to contain about 24 per cent phosphorus.

If the B.T.N. specifications for heading 28.55 were to be used as the basis for a tariff item in the Canadian Customs Tariff, ferrophosphorus containing 15 per cent or more of phosphorus by weight would be classified under this item. Ferrophosphorus which contains less than 15 per cent phosphorus (B.T.N. heading 73.02) would have to be classified under another item in the Customs Tariff.

(1) Transcript, Vol. 34, p. 4906

CARBIDES (FOR EXAMPLE, SILICON CARBIDE, BORON
CARBIDE, METALLIC CARBIDES) - B.T.N. 28.56

INTRODUCTION

Although heading 28.56 of the B.T.N. relates to a large number of compounds, only one, calcium carbide, was the subject of representations to the Board. For all other products of heading 28.56, the Industry Committee recommended rates of 15 p.c., B.P. and 20 p.c., M.F.N.⁽¹⁾

The spokesman for the Committee said that, as far as the Committee was aware, calcium carbide was the only commercially significant product of the heading. While other carbides are known to be commercially important, to the best of the Committee's knowledge, these are mixtures of metal carbides and would therefore be classified elsewhere in the B.T.N., for example, under heading 38.19 and not under heading 28.56.

The Committee did not indicate why rates of 15 p.c., B.P. and 20 p.c., M.F.N. would be appropriate specifically for the residual products of heading 28.56.

CALCIUM CARBIDE

The Product and the Industry

Calcium carbide is a grey solid produced when limestone and coke, mixed in the correct proportions, are heated to a temperature of 2000°C. or higher, usually in electric furnaces. The molten calcium carbide which forms is cooled and broken up. Various grades of calcium carbide are available commercially according to the size of the lumps. When water is added to calcium carbide, acetylene gas is released.

Acetylene gas is an important intermediate in the production of a wide variety of organic chemicals; a much smaller use of acetylene gas is for welding and similar metallurgical uses. Most of the calcium carbide that is made in Canada is for captive use in the production of acetylene gas and calcium cyanamide for the production of chemicals and synthetic resins. The relatively small part of the total output used to generate acetylene gas for welding was said to account for practically all commercial sales of calcium carbide in Canada. Acetylene gas is dealt with in the section of the report on products of B.T.N. heading 29.01.

In Canada, two companies produce calcium carbide: Shawinigan Chemicals Limited, at Shawinigan, Quebec and Cyanamid of Canada Limited, at Niagara Falls, Ontario. At the time of the hearing, in 1961, the annual productive capacity of the former was said to be

(1) Transcript, Vol. 34, p. 4930-31

240,000 tons of calcium carbide and of the latter, about 225,000 tons. The spokesman for Shawinigan Chemicals said his company's plant had not operated at full capacity since 1951.⁽¹⁾ The two Canadian plants are amongst the largest on the North American continent and together were reported to account for almost 40 per cent of the estimated capacity in North America in 1963.⁽²⁾

The Market

Some 90 per cent of the merchant sales of calcium carbide in Canada was said to be for generating acetylene gas for welding. Shipments of acetylene gas by the compressed gases industry in recent years have averaged approximately 200 million cubic feet annually which would require about 22,000 tons of calcium carbide. An additional 2,000 tons, or more, of calcium carbide are sold domestically each year either for miscellaneous generation of acetylene or for other uses. At an estimated value at plant of \$83 a ton,⁽³⁾ merchant sales in Canada would have a total value, at plant, of about \$2 million annually.

Data on exports are available only for those to the U.S.A. These show exports varying between 5,271 tons and 6,832 tons annually, in the four years 1960 to 1963, valued between \$350,000 and \$435,000. In 1964 exports rose sharply, to 12,051 tons valued at \$770,000. When known export sales are added to estimated domestic sales, total sales of calcium carbide in 1960-63 appear to have been around 30,000 tons annually valued at more than two million dollars, rising in 1964 to about 35,000 tons valued at nearly \$3 million. The very large balance of Canadian production is used captively by the producing plants.

Calcium carbide is valued chiefly as a source of acetylene gas and calcium cyanamide. The acetylene gas, in turn, is used for welding, for the manufacture of other chemicals and for other purposes. Among the captive uses of the gas by Shawinigan Chemicals is the production of a range of synthetic resins and of acetylene black. The calcium cyanamide produced by Cyanamid of Canada enters into a range of chemical products in addition to melamine resins.

About two-thirds of the Canadian market for calcium carbide was said to be in Quebec and Ontario. The distribution of the market, at the time of the public hearing, in 1961, was estimated as follows:

	<u>Tons (est.)</u> ^(a)	<u>Per Cent</u> ^(b)
Atlantic Provinces	1,900	8
Quebec	6,700	28
Ontario	8,700	36
Prairie Provinces	4,100	17
British Columbia	<u>2,600</u>	<u>11</u>
	24,000	100

(a) Assumes total sales in Canada of 24,000 tons, inclusive of imports
 (b) Transcript, Vol. 34, p. 4943

(1) Transcript, Vol. 34, p. 4935
 (2) Oil, Paint and Drug Reporter, July 15, 1963, p. 9
 (3) The price to compressing plants in 1961

Because acetylene gas is a dangerous and expensive commodity to transport, calcium carbide is a very much safer and cheaper method of shipment. The process of generating acetylene gas from calcium carbide is simple and relatively inexpensive; under ordinary circumstances generating plants are established near the point where the gas is to be used.

Points of major consumption of acetylene gas tend to be at large centres of population or where there are metal fabricators. In 1964 there were 43 known generating plants all owned by companies which specialized in the sale of other compressed industrial gases as well.

It should be kept in mind that 90 per cent of Canadian consumption of calcium carbide is for the production of organic chemicals; this use is supplied from captive production by Shawinigan Chemicals and Cyanamid. For use in the manufacture of chemicals, relatively coarse calcium carbide is used, the so-called "run-of-the-crusher" grade; for use by gas compressors, the "standard sizes" are used. In Canada, the standard sizes constitute the bulk of the merchant market, because there are few if any sales for chemical manufacture. In the U.S.A., there are substantial sales of the coarser materials. Several grades of relatively finely-ground calcium carbide are also sold. These were said to command a premium price for use mainly in portable gas generators.

In Canada, calcium carbide is sold f.o.b. plant, freight equalized. However, the bulk of sales are on a contract basis, the contracts being negotiated between the Canadian producers and the national distributors of acetylene gas. The discussion at the hearing indicated that a single price f.o.b. supplier is negotiated and the buyer supplies the returnable drums and bears the cost of freight for the product and for the return of the empty drums. In 1961, the Shawinigan price to compressing plants was given as \$83 a ton, freight equalized on Niagara Falls, Ontario.

In the U.S.A., calcium carbide is sold mainly on a delivered basis; the drums are owned by the supplier and the supplier bears the cost of delivery and the cost of return freight on the empty drums. As a result, Canadian and U.S.A. prices cannot be directly compared. At the time of the hearing, the delivered price in most of the U.S.A. was said to be \$137.30 a ton for standard sizes or \$112 f.o.b. plant, whichever was lower. In the U.S. Pacific Northwest, the comparable price was \$95 a ton, f.o.b. plant.

Plants in the U.S.A., which were cited as being potential competitors in the Canadian market, were located at Niagara Falls, New York; Ashtabula, Ohio; Sault Ste. Marie, Michigan, and Portland, Oregon. It has been reported that the plant at Sault Ste. Marie, Michigan has not produced calcium carbide since 1961.

Imports of calcium carbide are a minor factor in the Canadian market. In the five years, 1960-64, imports from the U.S.A. have averaged about 640 tons annually and have been less than 1,000 tons in all years. The spokesman for Shawinigan Chemicals said he believed imports were "essentially into British Columbia and Alberta".⁽¹⁾ From this it

(1) Transcript, Vol. 34, p. 4944

would appear that the competition from plants in the U.S.A. is limited mainly to the regions remote from Canadian production. Plants at Portland, Oregon, would have a substantial freight advantage over both of the Canadian plants in delivering to this area. Even so, in the Prairie Provinces and British Columbia, it appears that the Canadian producers supply more than 90 per cent or more of the annual consumption, estimated at 6,700 tons.

As indicated earlier, the only export data available relate to the United States. However, Shawinigan Chemicals informed the Board that the company also exports regularly to other countries. The company's spokesman said "We have a small basic market in South America, Central America and the West Indies".⁽¹⁾ Although the extent of these exports is not known, the available data indicate that Canadian exports regularly exceed imports by a wide margin. Shawinigan Chemicals noted that it has an advantage over U.S. plants in deliveries to the north-eastern U.S.A. Virtually all imports into the U.S.A. are from Canada. In most years, Canada is the only foreign supplier of that market.

Imports of Calcium Carbide from the U.S.A. and
Exports to the U.S.A. from Canada, 1959-64

	<u>Imports</u>		<u>Exports</u>	
	tons	\$U.S. ('000)	tons	\$U.S. ('000)
1959	345	41	14,816	971
1960	403	48	5,440	401
1961	511	57	5,271	351
1962	920	103	5,589	355
1963	830	93	6,832	435
1964	551	57	12,051	770

Source: U.S. Imports for Consumption, Publication FT110, s.c. 8247100 and U.S. Exports, Publication FT410, s.c. 83410

The cost of freight is an important consideration in the laid-down cost of calcium carbide. For example, the lowest cost of freight by rail and water, from either Shawinigan, Quebec, or Niagara Falls, Ontario, to Vancouver is \$31.80 per ton, inclusive of the weight of the container. Even if no allowance is made for the weight of the steel drums or the return freight on the empty drums, this amount is substantial compared with a contract price, f.o.b. supplier, of \$83.00 a ton. Freight costs to Alberta points are much higher. To Calgary the comparable rate is \$52.60 a ton and to Edmonton \$51.60. Thus, on deliveries to British Columbia and Alberta, total freight costs would be of the order of 40 per cent to almost 65 per cent of the contract price, f.o.b. plant, exclusive of the cost of return freight on the empty container.

⁽¹⁾ Transcript, Vol. 34, p. 4948

Agreed Charges from Shawinigan, Quebec,
to Selected Destinations in Canada, February, 1965

	From <u>Shawinigan, Que.</u> (a) \$ per ton
Vancouver, B.C.	31.80
Calgary, Alta	52.60
Regina, Sask.	43.40
Winnipeg, Man.	32.40
Sault Ste. Marie, Ont.	20.60
Welland, Ont.	16.40
Montreal, Que.	7.00
Moncton, N.B.	12.40
Halifax, N.S.	13.00
St. John's, Nfld.	21.80

(a) Lowest rates only are given

Source: Canadian Freight Association

Tariff Considerations

Calcium carbide is entered under tariff item 711 at rates of 15 p.c., B.P. and 20 p.c., M.F.N. At the public hearing, in March 1961, Shawinigan Chemicals Limited urged that there be no change in the existing rates of duty.⁽¹⁾ No other representations were made to the Board related specifically to calcium carbide.

The company supported its proposal mainly on the grounds of potential competition from producers in the U.S.A. and elsewhere. The spokesman for the company said that there are plants in the U.S.A. closer to more than half the Canadian market than Canadian plants and that "Any reduction in the duty would encourage further imports or require a reduction in our net realized value."⁽²⁾ He also referred to the potential competition from overseas producers located on tide-water and said, "Any reduction in duty could start a wholesale invasion of the limited Canadian market from this quarter as well."⁽³⁾

Calcium carbide is produced in Canada primarily for the manufacture of chemicals; less than ten per cent of the total output enters commercial trade. Of the estimated domestic sales of more than 30,000 tons annually, almost three quarters are east of Manitoba, a region in which the two Canadian producers generally have freight advantages at least over most of the potential competitors in the U.S.A. or overseas. At some important consuming locations these advantages would be considerable. Imports average about 640 tons annually, less than three per cent of the estimated commercial market in Canada. In no recent

(1) Transcript, Vol. 34, p. 4951

(2) Same, Vol. 34, p. 4952

(3) Same, Vol. 34, p. 4952

year have the Canadian producers accounted for less than 96 per cent of estimated commercial sales in Canada. Imports were said to be almost entirely into the two westernmost provinces.

While the existing rates of duty may be a factor in pricing the Canadian product, the fear expressed by Shawinigan Chemicals that "any reduction in duty could start a wholesale invasion of the limited Canadian market" appears to be unwarranted on the basis of the available information. The exports by Canadian producers have recently been increasing and in 1964 were 12,000 tons, with a value approaching \$800,000, compared with imports averaging only about 600 tons a year, with an average value of about \$75,000. Moreover, the Canadian plants are amongst the largest in the world and were not represented as being under any particular disadvantage with respect to costs of raw materials or power, the major items of cost in producing calcium carbide. The fact that Canadian producers supply virtually all of the calcium carbide imported into the U.S.A. indicates that Canadian plants have for many years operated successfully in this market against the competition of overseas producers.

HYDRIDES, NITRIDES AND AZIDES,
SILICIDES AND BORIDES - B.T.N. 28.57

INTRODUCTION

Only one product classified in heading 28.57 of the Brussels Tariff Nomenclature was the subject of formal representations to the Board, namely sodium azide. In addition, potassium borohydride and sodium borohydride were the subjects of expressions of interest by others. For all products of heading 28.57 which were not the subject of proposals by others, the Industry Committee proposed rates of 15 p.c., B.P. and 20 p.c., M.F.N.⁽¹⁾

There are virtually no published data available relating to the products of heading 28.57. It appears that except for sodium azide chemicals classified under this heading are of very minor economic importance in Canada. The spokesman for the Industry Committee said that the Committee believed that sodium azide was the only chemical of commercial significance under heading 28.57 of the B.T.N.

The Canadian Pharmaceutical Manufacturers Association expressed an interest in potassium borohydride. The Association urged that chemicals that are not made in Canada and that are not otherwise provided for, should be subject to rates of Free, B.P. and 15 p.c., M.F.N., when imported for use in the manufacture of pharmaceuticals.⁽²⁾ The Association did not indicate why such rates would be appropriate specifically for potassium borohydride.

The Canadian Pulp and Paper Association expressed an interest in sodium borohydride. The Association urged that there be no increase in rates of duty for chemicals used by its members.⁽³⁾

Both of these chemicals at present are entered under item 208t of the Customs Tariff, duty-free under the B.P. Tariff and dutiable at 15 p.c., M.F.N.

SODIUM AZIDE

It was reported to the Board that, since 1941, sodium azide has been produced by only one plant in North America, that of Canadian Industries Limited (C.I.L.) at Beloeil, Quebec. Sodium azide is used in Canada and the U.S.A. in the production of lead azide, a chemical employed in commercial detonators and, in the U.S.A., for the prevention of enzymatic brown stain in sugar pine lumber. At the time of the public hearing, in March 1961, C.I.L. was the only Canadian producer of lead azide.

⁽¹⁾ Transcript, Vol. 34, p. 5020

⁽²⁾ Same, Vol. 87, p. 13321

⁽³⁾ Same, Vol. 85, p. 13006

At the public hearing in 1961, the spokesman for C.I.L. informed the Board that production of sodium azide was less than 100,000 pounds annually. Based on the average value of exports in 1961, of \$1.60 a pound, the value of production would appear to be under \$150,000.

Some 90 per cent of the output was said to be exported to the U.S.A. where about one half of the imports was used to produce lead azide and the remainder for dip for sugar pine lumber. C.I.L. estimated that it supplied about two thirds of the U.S. requirements of sodium azide. The spokesman said that the company competed with Western Germany in supplying the U.S. market. Up to the time of the hearing no sodium azide had been imported into Canada.

In March 1961, imports of sodium azide into the U.S.A. were dutiable at 8.5 cents a pound, or the equivalent of about 5 p.c., ad valorem.

Tariff Considerations

If imported, sodium azide would be entered under tariff item 711 at rates of 15 p.c., B.P. and 20 p.c., M.F.N. At the public hearing, Canadian Industries Limited proposed that sodium azide should continue to be dutiable at rates of 15 p.c., B.P. and 20 p.c., M.F.N. (1)

There were no other representations related specifically to sodium azide.

In support of its proposal, the spokesman for C.I.L. said that, if the Canadian market for the product expanded, lower rates of duty might attract imports from European producers. He also said that there were some rumors that production might be started in the U.S.A.; lower rates would then make the Canadian market vulnerable to imports from that country. He noted that sodium constituted the most important single element of cost in producing sodium azide; imports of sodium from the U.S.A. are dutiable under item 208t at 15 p.c., M.F.N. unless entered duty-free under end-use item 263d.

It was estimated that, at the time of the hearing, production of sodium azide was less than 100,000 pounds annually of which 90 per cent was exported to the U.S.A. Thus the total use in Canada, all captive, was less than 10,000 pounds, valued perhaps at about \$15,000 at commercial prices. Unless there were a spectacular increase in Canadian use, sales of sodium azide in the U.S.A. would continue to be the only substantial outlet for C.I.L. production. A change in the Canadian rates of duty on sodium azide would, therefore, be unlikely to affect appreciably the current position of the company. Discussions at the hearing suggested that large increases in Canadian use of sodium azide were unlikely to occur because sugar pine does not grow in large quantity in Canada.

(1) Transcript, Vol. 34, p. 5023

The spokesman for C.I.L. estimated that elemental sodium constituted about 16 per cent of the total cost of production of sodium azide. Sodium is not produced in Canada. It is imported from the U.S.A., and is dutiable at 15 p.c., M.F.N. under tariff item 208t. C.I.L. cited the duty on sodium as a disadvantage relative to potential producers of sodium azide in the U.S.A. However, C.I.L. made no representations to the Board for lower rates of duty on sodium. The company is eligible for drawback of duty paid on the sodium which it uses in the exported sodium azide.

OTHER INORGANIC COMPOUNDS (INCLUDING DISTILLED AND
CONDUCTIVITY WATER AND WATER OF SIMILAR PURITY);
AMALGAMS, EXCEPT AMALGAMS OF PRECIOUS METALS - B.T.N. 28.58

Heading 28.58 of the Brussels Tariff Nomenclature provides for inorganic compounds that are not classified elsewhere under the B.T.N. and for certain specified products such as distilled water and some amalgams. However, although many chemicals would be classified under this heading, the spokesman for the Industry Committee said, "The Committee believes that the only commercially significant product of this heading is dealt with in the submission which the Board has received for this hearing."⁽¹⁾

The product to which reference was made was calcium cyanamide, the subject of representations by Cyanamid of Canada Limited.

In the B.T.N., calcium cyanamide which contains, in the dry state, not more than 25 per cent by weight of nitrogen, is classified with fertilizers under heading 31.02 or 31.05; the calcium cyanamide which is classified under heading 28.58 contains more than 25 per cent by weight of nitrogen. Cyanamid of Canada Limited is the only known producer of calcium cyanamide in North America. A spokesman for the company informed the Board that the product which was the subject of representations by his company, in March 1961, contained 21 to 22 per cent by weight of nitrogen and would never contain as much as 25 per cent nitrogen. Thus, this product would be classified under B.T.N. headings 31.02 or 31.05 and is dealt with in these sections of the report.

Sodium cyanamide was the subject of an expression of interest on the part of the Canadian Federation of Agriculture. There are no published data available concerning this chemical. The Federation listed the product as a constituent of fertilizers and pesticides and urged that all products used in the manufacture of fertilizers and pesticides should be entered free of duty under all Tariffs;⁽²⁾ there is a possibility that the product mentioned by the Federation would more accurately be described as calcium cyanamide.

No representations were made to the Board related specifically to other chemicals classified under heading 28.58. As noted above, the Industry Committee proposed that all products of heading 28.58, which were not the subject of proposals by others, should be dutiable at rates of 15 p.c., B.P. and 20 p.c., M.F.N., in an item worded like heading 28.58 of the B.T.N.⁽³⁾ The spokesman for the Committee did not indicate why these rates would be appropriate specifically for products of the heading.

⁽¹⁾ Transcript, Vol. 34, p. 5040

⁽²⁾ Same, Vol. 83, p. 12813; Vol. 110, p. 16631

⁽³⁾ Same, Vol. 34, p. 5041

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Table 1

Imports: Soda, sulphide of, s.c. 8364 ^(a)

Tariff Items 210 and 851

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u> <u>Value</u>	<u>Dutiable</u> <u>Value</u>	<u>Duty</u> <u>Collected</u>	<u>Duty as</u> <u>p.c. of</u> <u>Dutiable</u> <u>Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	2,618	117	.04	62	7,732	12.5
1954	2,283	103	.05	63	7,842	12.5
1955	3,446	165	.05	146	18,209	12.5
1956	3,897	191	.05	165	20,686	12.5
1957	3,329	164	.05	133	16,609	12.5
1958	2,355	125	.05	107	13,336	12.5
1959	2,602	136	.05	123	15,433	12.6
1960	2,602	139	.05	129	16,196	12.5
1961	3,841	218	.06	194	24,218	12.5
1962	3,226	177	.05	160	20,401	12.7
1963	2,763	168	.06	161	20,145	12.5
1964	3,562	213	.06	210	26,211	12.5
<u>2. United Kingdom</u>						
1953	1,297	55	.04	-	-	-
1954	944	40	.04	-	-	-
1955	458	20	.04	-	-	-
1956	518	23	.04	-	-	-
1957	710	31	.04	-	-	-
1958	376	18	.05	-	-	-
1959	284	13	.05	-	-	-
1960	168	8	.05	-	-	-
1961	326	17	.05	-	-	-
1962	287	16	.06	-	-	-
1963	97	6	.06	-	-	-
1964	43	3	.06	-	-	-

Table 1
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Dutiable</u>
				(000)		<u>Value</u>
<u>3. United States</u>						
1953	1,317	62	.05	62	7,711	12.5
1954	1,328	62	.05	62	7,771	12.5
1955	2,998	146	.05	146	18,209	12.5
1956	3,379	168	.05	165	20,686	12.5
1957	2,620	133	.05	133	16,609	12.5
1958	1,946	105	.05	105	13,161	12.5
1959	2,319	123	.05	123	15,433	12.6
1960	2,252	123	.05	121	15,183	12.5
1961	3,494	199	.06	192	24,066	12.5
1962	2,890	159	.05	158	20,124	12.7
1963	2,628	160	.06	159	19,906	12.5
1964	3,519	210	.06	210	26,211	12.5

(a) Beginning in 1964 renumbered as s.c. 403-54

Table 2

Imports: Sodium hydrosulphite, s.c. 8341 (a)

Tariff Item 203a

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u> <u>p.c. of</u> <u>Dutiable</u> <u>Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	
				(000)		
<u>1. Total</u>						
1962	4,762	1,090	.23	2	486	20.0
1963	4,327	943	.22	2	363	15.0
1964	5,004	1,093	.22	-	-	-
<u>2. United Kingdom</u>						
1962	1,936	469	.24	-	-	-
1963	1,767	430	.24	-	-	-
1964	1,880	450	.24	-	-	-
<u>3. United States</u>						
1962	2,159	488	.23	2	486	20.0
1963	1,186	260	.22	2	363	15.0
1964	1,664	380	.23	-	-	-
<u>4. Germany, Fed. Rep. of</u>						
1962	507	105	.21	-	-	-
1963	783	152	.19	-	-	-
1964	1,107	208	.19	-	-	-

(a) Prior to 1962 included in s.c. 8104; "Chemical Compounds adapted for dyeing and tanning n.o.p."; beginning in 1964 renumbered as s.c. 403-56

Table 3

Imports: Soda, sulphite of, s.c. 8365 ^(a)

Tariff Items 210 and 851

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u> <u>Value</u>	<u>Dutiable</u> <u>Value</u>	<u>Duty</u> <u>Collected</u>	<u>Duty as</u> <u>p.c. of</u> <u>Dutiable</u> <u>Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	3,690	144	.04	135	16,820	12.5
1954	6,903	168	.02	164	20,514	12.5
1955	4,616	113	.02	111	13,841	12.5
1956	6,693	155	.02	131	16,381	12.5
1957	9,609	238	.02	109	13,583	12.5
1958	9,046	206	.02	172	21,519	12.5
1959	15,993	365	.02	223	28,159	12.6
1960	14,531	312	.02	242	30,386	12.6
1961	9,294	250	.03	246	30,803	12.5
1962	11,000	275	.02	271	34,069	12.6
1963	12,628	276	.02	255	32,031	12.5
1964	12,456	242	.02	228	28,605	12.5
<u>2. United Kingdom</u>						
1953	237	9	.04	-	-	-
1954	86	4	.04	-	-	-
1955	116	2	.01	-	-	-
1956	1,490	24	.02	-	-	-
1957	6,519	129	.02	-	-	-
1958	1,717	34	.02	-	-	-
1959	6,016	142	.02	-	-	-
1960	3,033	70	.02	-	-	-
1961	155	3	.02	-	-	-
1962	170	4	.02	-	-	-
1963	614	18	.03	-	-	-
1964	207	13	.06	-	-	-

Table 3
(Cont'd)Duty as
p.c. of
Dutiable
Value

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	
				(000)		

3. United States

1953	1,927	87	.05	87	10,853	12.5
1954	4,013	117	.03	117	14,584	12.5
1955	1,990	72	.04	72	8,987	12.5
1956	2,927	86	.03	86	10,732	12.5
1957	3,080	108	.04	108	13,525	12.5
1958	7,309	171	.02	171	21,400	12.5
1959	9,934	220	.02	220	27,888	12.7
1960	11,431	239	.02	239	30,060	12.6
1961	8,159	219	.03	219	27,345	12.5
1962	9,839	237	.02	237	29,792	12.6
1963	11,962	255	.02	255	31,972	12.5
1964	12,216	228	.02	227	28,431	12.5

4. Germany, Fed. Rep. of

1953	666	25	.04	25	3,158	12.5
1954	79	5	.07	5	686	12.5
1955	32	2	.06	1	82	12.5
1956	72	3	.05	3	393	12.5
1957	10	*	.05	*	58	12.5
1958	20	1	.05	1	119	12.4
1959	43	2	.05	2	271	12.5
1960	66	3	.04	3	326	12.5
1961	98	4	.04	4	451	12.5
1962	209	12	.06	12	1,476	12.5
1963	51	2	.04	*	59	12.4
1964	33	1	.04	1	174	12.5

5. Belgium and Luxembourg

1953	860	22	.03	22	2,809	12.5
1954	2,725	42	.02	42	5,244	12.5
1955	2,478	38	.02	38	4,772	12.5
1956	2,205	42	.02	42	5,256	12.5
1957-60	-	-	-	-	-	-
1961	882	24	.03	24	3,007	12.5
1962	782	22	.03	22	2,801	12.5
1963-64	-	-	-	-	-	-

(a) Beginning in 1964 renumbered as s.c. 403-58

Table 4

Imports: Soda, hyposulphite of, s.c. 8356(a)

Tariff Items 208t, 711 and 728

Year	Total Imports		Unit	Dutiable	Duty	Duty as
	lb.		Value	Value	Collected	p.c. of
	(000)	(000)	\$/lb.	\$	\$	Dutiable
				(000)		Value
<u>1. Total</u>						
1953	886	40	.05	30	4,489	14.8
1954	557	26	.05	23	3,517	15.4
1955	779	38	.05	33	4,964	15.2
1956	986	48	.05	46	7,083	15.4
1957	1,064	54	.05	48	7,489	15.5
1958	911	46	.05	42	6,405	15.4
1959	752	35	.05	31	5,091	16.3
1960	395	18	.05	13	1,987	15.8
1961	402	21	.05	18	2,751	15.2
1962	589	35	.06	35	5,397	15.6
1963	464	27	.06	26	4,224	16.3
<u>2. United Kingdom</u>						
1953	327	12	.04	2	259	15.0
1954	243	8	.03	5	744	15.0
1955	377	14	.04	8	1,242	15.0
1956	353	12	.03	10	1,505	15.0
1957	430	14	.03	8	1,225	15.0
1958	389	14	.03	9	1,326	15.0
1959	134	4	.03	1	138	15.5
1960	212	7	.04	2	317	15.4
1961	137	5	.03	2	290	15.0
1962	41	2	.04	1	181	16.1
1963	22	1	.04	-	-	-

Table 4
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	Duty as p.c. of Dutiable Value
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	¢/lb.	\$ (000)	\$	
<u>3. United States</u>						
1953	559	29	.05	29	4,230	14.8
1954	314	18	.06	18	2,773	15.5
1955	402	24	.06	24	3,722	15.2
1956	633	36	.06	36	5,578	15.6
1957	633	40	.06	40	6,264	15.6
1958	476	30	.06	30	4,602	15.6
1959	375	23	.06	23	3,463	15.3
1960	183	11	.06	11	1,670	15.8
1961	255	16	.06	16	2,369	15.3
1962	258	18	.07	18	2,698	15.1
1963	277	19	.07	19	2,958	15.3
<u>4. France</u>						
1953-57	-	-	-	-	-	-
1958	22	1	.06	1	196	15.0
1959	242	8	.03	8	1,490	19.3
1960	-	-	-	-	-	-
1961	10	1	.06	1	92	14.9
1962	290	16	.05	16	2,518	16.1
1963	165	7	.04	7	1,266	19.1

(a) Beginning in 1964 included in s.c. 404-99

Table 5

Imports: Soda, bisulphite of, s.c. 8349^(a)

Tariff Items 210 and 851

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	410	18	.04	11	1,401	12.5
1954	555	25	.05	11	1,413	12.5
1955	1,293	59	.05	11	1,316	12.5
1956	806	39	.05	10	1,288	12.5
1957	793	37	.05	9	1,121	12.5
1958	1,384	72	.05	14	1,800	12.5
1959	2,036	99	.05	27	3,385	12.5
1960	2,223	104	.05	36	4,523	12.5
1961	2,377	115	.05	62	7,803	12.6
1962	2,532	128	.05	91	11,465	12.6
1963	3,165	148	.05	109	13,595	12.5
1964	1,569	77	.05	77	9,581	12.5

2. United Kingdom

1953	162	7	.04	-	-	-
1954	272	12	.04	-	-	-
1955	253	11	.04	-	-	-
1956	273	14	.05	-	-	-
1957	257	13	.05	-	-	-
1958	877	49	.06	-	-	-
1959	1,074	52	.05	-	-	-
1960	943	46	.05	-	-	-
1961	847	44	.05	-	-	-
1962	443	24	.05	-	-	-
1963	648	30	.05	-	-	-
1964	14	1	.04	-	-	-

Table 5
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Dutiable</u>
				(000)		<u>Value</u>
<u>3. United States</u>						
1953	248	11	.05	11	1,401	12.5
1954	258	12	.05	10	1,298	12.5
1955	1,005	47	.05	9	1,147	12.5
1956	474	22	.05	8	998	12.5
1957	490	22	.05	7	912	12.5
1958	397	19	.05	10	1,277	12.5
1959	567	30	.05	13	1,605	12.5
1960	669	35	.05	19	2,404	12.5
1961	772	39	.05	35	4,434	12.5
1962	1,453	76	.05	70	8,826	12.6
1963	1,627	80	.05	81	10,084	12.5
1964	1,348	68	.05	68	8,461	12.5
<u>4. Germany, Fed. Rep. of</u>						
1953	-	-	-	-	-	-
1954	24	1	.04	1	115	12.5
1955	35	1	.04	1	169	12.5
1956	57	2	.04	2	275	12.5
1957	42	1	.03	1	179	12.5
1958	110	4	.04	4	523	12.5
1959	396	16	.04	14	1,780	12.5
1960	611	23	.04	17	2,119	12.5
1961	758	31	.04	26	3,369	12.8
1962	624	28	.04	21	2,594	12.5
1963	846	35	.04	27	3,339	12.5
1964	206	9	.04	9	1,120	12.5

(a) Beginning in 1964 renumbered as s.c. 403-57

Table 6

Imports: Sulphate of alumina or alum cake, s.c. 8254 (a)

Tariff Item 212

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	28,859	510	.02	261	26,093	10.0
1954	33,920	591	.02	271	27,057	10.0
1955	29,127	522	.02	258	25,848	10.0
1956	25,794	461	.02	209	20,884	10.0
1957	30,095	581	.02	354	35,397	10.0
1958	12,294	228	.02	147	14,747	10.0
1959	14,741	268	.02	142	14,202	10.0
1960	17,798	323	.02	169	16,925	10.0
1961	7,766	153	.02	116	11,635	10.0
1962	5,011	107	.02	87	8,743	10.0
1963	4,978	115	.02	101	10,115	10.0
1964	5,565	119	.02	73	7,258	9.9
<u>2. United Kingdom</u>						
1953	14,391	249	.02	-	-	-
1954	19,346	321	.02	-	-	-
1955	15,405	263	.02	-	-	-
1956	14,810	252	.02	-	-	-
1957	11,905	225	.02	-	-	-
1958	4,580	81	.02	-	-	-
1959	7,497	126	.02	-	-	-
1960	9,372	154	.02	-	-	-
1961	2,170	37	.02	-	-	-
1962	1,105	20	.02	-	-	-
1963	511	14	.03	-	-	-
1964	2,437	43	.02	-	-	-

Table 6
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	
				(000)		
<u>3. United States</u>						
1953	14,469	261	.02	261	26,093	10.0
1954	14,431	268	.02	268	26,800	10.0
1955	13,537	255	.02	255	25,542	10.0
1956	10,847	206	.02	206	20,645	10.0
1957	15,612	312	.02	310	30,987	10.0
1958	7,300	139	.02	139	13,905	10.0
1959	6,860	135	.02	135	13,496	10.0
1960	8,047	163	.02	163	16,282	10.0
1961	5,379	112	.02	112	11,228	10.0
1962	3,632	81	.02	81	8,086	10.0
1963	4,039	93	.02	93	9,331	10.0
1964	2,968	73	.02	70	7,002	9.9
<u>4. Germany, Fed. Rep. of</u>						
1953	-	-	-	-	-	-
1954	103	2	.02	2	172	10.0
1955	185	3	.02	3	306	10.0
1956	137	2	.02	2	239	10.0
1957	1,441	24	.02	24	2,387	10.0
1958	381	8	.02	8	786	10.0
1959	290	6	.02	6	553	10.0
1960	279	5	.02	5	475	10.4
1961	217	4	.02	4	407	10.0
1962	220	5	.02	5	553	10.7
1963	428	8	.02	8	784	10.0
1964	160	3	.02	3	256	9.9

(a) Beginning in 1964 renumbered as s.c. 403-73

Table 7

Imports: Copper, sulphate of, s.c. 8275^(a)

Tariff Items 208c, 208m and 791

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>1. Total</u>						
1953	3,992	468	.12	124	12,376	10.0
1954	2,125	206	.10	9	872	10.0
1955	2,266	310	.14	98	9,775	10.0
1956	2,063	323	.16	72	7,183	10.0
1957	2,036	263	.13	65	6,510	10.0
1958	2,250	238	.11	59	5,907	10.0
1959	2,617	289	.11	72	7,241	10.0
1960	2,235	283	.13	73	7,352	10.0
1961	773	113	.15	62	6,215	10.0
1962	874	159	.18	60	6,093	10.1
1963	733	112	.15	41	4,100	10.0
1964	435	69	.16	57	5,738	10.0
<u>2. United Kingdom</u>						
1953	2,057	201	.10	-	-	-
1954	1,976	180	.09	-	-	-
1955	1,080	129	.12	-	-	-
1956	1,299	176	.14	-	-	-
1957	1,214	126	.10	-	-	-
1958	1,436	121	.08	-	-	-
1959	1,746	165	.09	-	-	-
1960	1,393	145	.10	-	-	-
1961	162	24	.15	-	-	-
1962	193	35	.18	-	-	-
1963	247	26	.11	-	-	-
1964	7	1	.17	-	-	-

Table 7
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	Duty as p.c. of Dutiable <u>Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	
				(000)		
<u>3. United States</u>						
1953	1,934	267	.14	124	12,376	10.0
1954	149	26	.18	9	872	10.0
1955	1,186	181	.15	98	9,775	10.0
1956	760	148	.19	72	7,174	10.0
1957	815	137	.17	65	6,500	10.0
1958	814	117	.14	59	5,907	10.0
1959	672	105	.16	59	5,906	10.0
1960	727	127	.17	63	6,353	10.0
1961	592	86	.15	62	6,215	10.0
1962	670	123	.18	60	6,093	10.1
1963	486	86	.18	41	4,100	10.0
1964	428	68	.16	57	5,738	10.0

(a) Beginning in 1964 renumbered as s.c. 403-79

Table 8

Imports: Soda, sulphate of, crude, or salt cake, s.c. 8363 ^(a)

Tariff Item 210d

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	65,604	517	.01	516	131,127	25.4
1954	60,471	483	.01	483	120,135	24.9
1955	59,855	574	.01	574	119,711	20.8
1956	60,638	559	.01	559	121,277	21.7
1957	56,176	511	.01	511	112,351	22.0
1958	51,625	478	.01	478	103,250	21.6
1959	54,314	511	.01	511	108,632	21.3
1960	49,412	472	.01	472	98,836	20.9
1961	64,620	575	.01	575	129,238	22.5
1962	62,694	609	.01	609	125,324	20.6
1963	38,005	386	.01	383	75,550	19.7
1964	61,667	599	.01	598	124,399	20.8
<u>2. United Kingdom</u>						
1953	22,652	185	.01	185	45,304	24.5
1954	22,247	174	.01	174	43,687	25.2
1955	22,113	229	.01	229	44,225	19.3
1956	19,487	189	.01	189	38,974	20.6
1957	18,362	174	.01	174	36,724	21.0
1958	18,299	185	.01	185	36,599	19.8
1959	18,198	200	.01	200	36,397	18.2
1960	20,839	224	.01	224	41,682	18.6
1961	19,301	201	.01	201	38,603	19.2
1962	18,150	210	.01	210	36,299	17.3
1963	12,108	130	.01	130	24,216	18.7
1964	17,722	187	.01	186	35,424	19.0

Table 8
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Dutiable</u>
				(000)		<u>Value</u>
<u>3. United States</u>						
1953	42,952	332	.01	331	85,823	25.9
1954	38,223	309	.01	309	76,448	24.7
1955	37,743	346	.01	346	75,486	21.8
1956	41,151	370	.01	370	82,303	22.3
1957	37,814	337	.01	337	75,627	22.4
1958	33,326	294	.01	294	66,651	22.7
1959	36,116	312	.01	312	72,235	23.2
1960	28,540	247	.01	247	57,088	23.1
1961	45,285	373	.01	373	90,569	24.3
1962	44,544	399	.01	399	89,025	22.3
1963	25,863	256	.01	253	51,267	20.3
1964	43,020	399	.01	399	86,983	21.8

(a) Beginning in 1964, renumbered as s.c. 403-62 and includes former class 8343, "Glauber salts"

Table 9

Imports: Glauber salts, s.c. 8343 ^(a)

Tariff Items 208t and 711

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Dutiable</u>
				(000)		<u>Value</u>
<u>1. Total</u>						
1953	10,986	150	.01	148	22,439	15.2
1954	10,267	145	.01	141	21,330	15.1
1955	7,776	131	.02	131	20,066	15.3
1956	5,536	91	.02	91	13,987	15.3
1957	3,023	51	.02	50	7,694	15.3
1958	2,435	39	.02	39	5,895	15.3
1959	1,932	40	.02	40	6,183	15.6
1960	2,302	38	.02	38	5,888	15.6
1961	1,798	29	.02	28	4,254	15.1
1962	853	23	.03	22	3,387	15.3
1963	991	28	.03	27	4,177	15.2

2. United Kingdom

1953	2	*	.04	-	-	-
1954	-	-	-	-	-	-
1955	-	-	-	-	-	-
1956	2	*	.06	-	-	-
1957	5	*	.07	*	23	15.2
1958	4	*	.06	*	17	15.2
1959	1	*	.21	-	-	-
1960	6	1	.09	-	-	-
1961	8	1	.09	-	-	-
1962	7	1	.09	*	26	14.8
1963	8	1	.09	-	-	-

Table 9
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>3. United States</u>						
1953	9,068	133	.01	131	19,901	15.2
1954	7,063	113	.02	113	17,097	15.2
1955	6,209	112	.02	112	17,076	15.3
1956	3,638	69	.02	69	10,583	15.4
1957	1,985	37	.02	37	5,626	15.4
1958	899	19	.02	19	2,992	15.5
1959	805	22	.03	22	3,577	16.1
1960	555	16	.03	16	2,676	16.3
1961	247	8	.03	8	1,174	15.2
1962	588	17	.03	17	2,643	15.4
1963	336	16	.05	16	2,483	15.3
<u>4. Germany, Fed. Rep. of</u>						
1953	1,871	17	.01	17	2,481	15.0
1954	3,161	31	.01	28	4,140	15.0
1955	1,556	20	.01	20	2,971	15.0
1956	1,896	23	.01	23	3,404	15.0
1957	1,032	14	.01	14	2,034	15.0
1958	1,531	19	.01	19	2,886	15.0
1959	1,125	17	.02	17	2,606	15.0
1960	1,741	21	.01	21	3,212	15.0
1961	1,543	21	.01	21	3,080	15.0
1962	258	5	.02	5	718	15.0
1963	647	11	.02	11	1,694	15.0

(a) Beginning in 1964 included in s.c. 403-62

Table 10

Imports: Alum, in bulk, ground or unground, but not calcined,
s.c. 6251(a)

Tariff Item 212

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$(000)	\$(000)	p.c. of Dutiable Value
<u>1. Total</u>						
1953	1,410	50	.04	36	3,641	10.0
1954	1,748	64	.04	42	4,211	10.0
1955	2,066	76	.04	42	4,230	10.0
1956	1,916	77	.04	48	4,839	10.0
1957	2,147	78	.04	29	2,935	10.0
1958	1,942	68	.04	31	3,148	10.1
1959	2,023	72	.04	30	3,076	10.1
1960	2,087	70	.03	33	3,373	10.3
1961	1,907	64	.03	21	2,174	10.3
1962	1,562	55	.04	20	2,027	10.2
1963	1,903	60	.03	28	2,903	10.4
<u>2. United Kingdom</u>						
1953	421	13	.03	-	-	-
1954	788	22	.03	-	-	-
1955	1,111	33	.03	-	-	-
1956	848	28	.03	-	-	-
1957	1,499	48	.03	-	-	-
1958	1,208	37	.03	-	-	-
1959	1,240	41	.03	-	-	-
1960	1,139	36	.03	-	-	-
1961	1,306	42	.03	1	146	10.0
1962	1,010	34	.03	-	-	-
1963	960	33	.03	-	-	-

Table 10
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	Duty as p.c. of Dutiable Value
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$(000)	\$	
<u>3. United States</u>						
1953	550	26	.05	26	2,576	10.0
1954	818	39	.05	39	3,894	10.0
1955	950	42	.04	42	4,205	10.0
1956	926	44	.05	44	4,381	10.0
1957	611	28	.05	28	2,826	10.0
1958	625	28	.04	28	2,809	10.0
1959	542	24	.04	24	2,407	10.0
1960	645	26	.04	26	2,620	10.0
1961	274	11	.04	11	1,144	10.0
1962	326	15	.05	14	1,406	10.2
1963	539	17	.03	17	1,747	10.0
<u>4. Germany, Fed. Rep. of</u>						
1953	439	11	.02	11	1,065	10.0
1954	142	3	.02	3	317	10.0
1955	-	-	-	-	-	-
1956	54	1	.02	1	114	10.2
1957	11	1	.07	1	76	10.1
1958	88	3	.03	3	269	10.0
1959	208	6	.03	6	572	10.0
1960	220	6	.03	5	495	10.0
1961	238	8	.03	7	676	10.0
1962	226	6	.03	6	621	10.0
1963	284	8	.03	8	788	10.0

(a) Beginning in 1964 included in s.c. 404-99

Table 11

Imports: Blanc fixe, s.c. 8184(a)

Tariff Item 240

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>¢</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	¢/lb.	¢	¢	
<u>1. Total</u>						
1953	523	19	.04	18	1,786	10.0
1954	624	34	.05	22	2,250	10.0
1955	1,199	55	.05	50	5,033	10.0
1956	897	43	.05	34	3,444	10.0
1957	743	42	.06	34	3,353	10.0
1958	896	49	.05	41	4,141	10.0
1959(b)	2,028	79	.04	72	7,174	10.0
1960	2,410	113	.05	91	9,143	10.0
1961	2,288	101	.04	93	9,317	10.0
1962	2,312	126	.05	109	10,925	10.0
1963	2,003	108	.05	103	10,277	10.0
<u>2. United Kingdom</u>						
1953	11	1	.10	-	-	-
1954	122	12	.09	-	-	-
1955	48	5	.09	-	-	-
1956	75	9	.11	*	19	9.9
1957	59	8	.14	-	-	-
1958	35	8	.22	-	-	-
1959	34	7	.20	-	-	-
1960	231	23	.10	1	66	10.0
1961	31	8	.26	-	-	-
1962	76	16	.22	-	-	-
1963	41	6	.14	-	-	-
<u>3. United States</u>						
1953	65	4	.06	4	376	10.0
1954	245	13	.05	13	1,297	10.0
1955	417	25	.06	25	2,544	10.0
1956	329	18	.05	18	1,769	10.0
1957	202	18	.09	18	1,825	10.0
1958	221	21	.09	21	2,094	10.0
1959	1,359	51	.04	51	5,108	10.0
1960	1,517	67	.04	67	6,675	10.0
1961	1,574	66	.04	66	6,560	10.0
1962	1,611	81	.05	81	8,096	10.0
1963	1,572	80	.05	80	7,973	10.0

Table 11
(Cont'd)

Year	Total Imports		Unit	Dutiable	Duty	Duty as
	lb.	ψ	Value	Value	Collected	p.c. of
	(000)	(000)	ψ/lb.	ψ	ψ	Dutiable
				(000)		Value
<u>4. Belgium and Luxembourg</u>						
1953	79	3	.03	3	263	10.0
1954	52	2	.04	2	189	10.0
1955	136	5	.04	5	542	10.0
1956	110	4	.04	4	406	10.0
1957	52	2	.04	2	188	10.0
1958	67	2	.04	2	237	10.0
1959	40	1	.04	1	145	10.0
1960	62	3	.04	3	263	10.0
1961	31	1	.05	1	142	10.0
1962	-	-	-	-	-	-
1963	20	1	.05	1	98	10.0
<u>5. Germany, Fed. Rep. of</u>						
1953	368	11	.03	11	1,147	10.0
1954	205	8	.04	8	764	10.0
1955	597	19	.03	19	1,947	10.0
1956	382	12	.03	12	1,250	10.0
1957	430	13	.03	13	1,340	10.0
1958	522	17	.03	17	1,662	10.0
1959	545	18	.03	18	1,751	10.0
1960	551	20	.04	20	1,959	10.0
1961	645	26	.04	26	2,591	10.0
1962	483	23	.05	23	2,289	9.9
1963	249	17	.07	17	1,737	10.0
<u>6. Netherlands</u>						
1953-57	-	-	-	-	-	-
1958	51	1	.03	1	148	10.0
1959	50	2	.03	2	170	10.0
1960	50	2	.04	2	180	10.0
1961	7	*	.04	*	24	10.2
1962	141	5	.04	5	540	10.0
1963	121	5	.04	5	469	10.0

(a) Beginning in 1964 included in s.c. 404-99

(b) In 1959 wording changed to "Blanc fixe and satin white"

Table 12

Imports: Satin white, s.c. 8191 ^(a)

Tariff Item 240

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	
				(000)		
<u>1. Total</u>						
1953	217	4	.02	4	362	10.0
1954	591	10	.02	10	1,011	10.0
1955	861	14	.02	14	1,399	10.0
1956	1,060	19	.02	19	1,852	10.0
1957	1,050	19	.02	19	1,873	10.0
1958	861	19	.02	19	1,928	10.0
<u>2. United States</u>						
1953	217	4	.02	4	362	10.0
1954	591	10	.02	10	1,011	10.0
1955	861	14	.02	14	1,399	10.0
1956	1,060	19	.02	19	1,852	10.0
1957	1,050	19	.02	19	1,873	10.0
1958	861	19	.02	19	1,928	10.0

(a) Beginning in 1959 included in s.c. 8184

Table 13

Imports: Basic chromic sulphate for tanning, s.c. 8105^(a)

Tariff Item 203a

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Dutiable</u>
				(000)		<u>Value</u>
<u>1. Total</u>						
1953	2,299	200	.09	-	-	-
1954	1,959	171	.09	-	-	-
1955	3,038	267	.09	-	-	-
1956	3,282	317	.10	-	-	-
1957	3,153	302	.10	-	-	-
1958	3,269	325	.10	-	-	-
1959	4,095	416	.10	8	1,074	14.1
1960	3,239	331	.10	-	-	-
1961	4,537	483	.11	4	530	15.0
1962	4,910	553	.11	6	1,119	20.0
1963	4,942	541	.11	17	2,624	15.0
1964	4,018	423	.11	2	242	15.0

2. United Kingdom

1953	356	24	.07	-	-	-
1954	376	28	.07	-	-	-
1955	601	45	.07	-	-	-
1956	507	43	.09	-	-	-
1957	607	50	.08	-	-	-
1958	430	36	.08	-	-	-
1959	195	18	.09	-	-	-
1960	81	10	.13	-	-	-
1961	125	14	.11	-	-	-
1962	174	22	.12	-	-	-
1963	119	13	.11	-	-	-
1964	257	27	.10	-	-	-

Table 13
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>3. United States</u>						
1953	1,673	153	.09	-	-	-
1954	1,507	135	.09	-	-	-
1955	2,284	210	.09	-	-	-
1956	2,663	264	.10	-	-	-
1957	2,397	238	.10	-	-	-
1958	2,782	284	.10	-	-	-
1959	3,900	398	.10	8	1,074	14.1
1960	3,046	311	.10	-	-	-
1961	4,298	458	.11	4	530	15.0
1962	4,616	520	.11	6	1,119	20.0
1963	4,512	492	.11	17	2,624	15.0
1964	3,705	391	.11	2	242	15.0

(a) Beginning in 1964 renumbered as s.c. 403-80

Table 14

Imports: Sulphate of iron (copperas), s.c. 8253(a)

Tariff Item 208n

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u> <u>p.c. of</u> <u>Dutiable</u> <u>Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>1. Total</u>						
1953	1,743	30	.02	28	2,801	10.0
1954	1,488	26	.02	25	2,503	10.0
1955	1,780	29	.02	26	2,595	10.0
1956	1,705	30	.02	26	2,648	10.0
1957	1,919	30	.02	25	2,453	10.0
1958	1,962	31	.02	27	2,722	10.0
1959	3,328	47	.01	36	3,605	10.0
1960	3,184	42	.01	38	3,878	10.3
1961	2,989	38	.01	35	3,603	10.3
1962	3,384	39	.01	36	3,742	10.5
1963	3,720	45	.01	43	4,633	10.8
<u>2. United Kingdom</u>						
1953	64	2	.02	-	-	-
1954	40	1	.01	-	-	-
1955	235	3	.01	-	-	-
1956	175	2	.01	-	-	-
1957	239	4	.02	-	-	-
1958	284	4	.01	-	-	-
1959	831	11	.01	-	-	-
1960	190	3	.01	-	-	-
1961	113	3	.02	-	-	-
1962	45	1	.03	-	-	-
1963	-	-	-	-	-	-

Table 14
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>¢</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	¢/lb.	¢	¢	<u>Dutiable</u>
				(000)		<u>Value</u>
<u>3. United States</u>						
1953	1,569	27	.02	27	2,727	10.0
1954	1,408	24	.02	24	2,449	10.0
1955	1,545	26	.02	26	2,595	10.0
1956	1,530	27	.02	26	2,648	10.0
1957	1,680	27	.02	25	2,453	10.0
1958	1,678	27	.02	27	2,722	10.0
1959	2,167	34	.02	34	3,353	10.0
1960	2,068	34	.02	32	3,323	10.4
1961	1,842	29	.02	29	3,088	10.7
1962	1,672	26	.02	24	2,595	10.8
1963	2,212	36	.02	34	3,724	11.1
<u>4. Japan</u>						
1953-1959	-	-	-	-	-	-
1960	440	3	.01	3	274	10.0
1961	1,023	6	.01	6	486	8.2
1962	1,668	12	.01	12	1,147	9.7
1963	1,508	9	.01	9	909	10.0

(a) Beginning in 1964 included in s.c. 404-99

Table 15

Imports: Magnesium sulphate or Epsom salts, s.c. 8376^(a)

Tariff Items 208t and 711

Year	Total Imports		Unit	Dutiable	Duty	Duty as
	lb.	\$	Value	Value	Collected	p.c. of
	(000)	(000)	\$/lb.	\$	\$	Dutiable
				(000)		Value
1. Total						
1953	5,523	81	.01	75	11,238	15.0
1954	4,731	70	.01	65	9,792	15.0
1955	4,752	69	.01	65	9,773	15.0
1956	5,228	70	.01	66	9,996	15.2
1957	5,116	71	.01	68	10,225	15.1
1958	4,905	71	.01	68	10,208	15.0
1959	5,443	71	.01	66	9,878	14.9
1960	4,867	64	.01	57	8,541	15.0
1961	5,183	70	.01	62	9,206	14.8
1962	5,611	81	.01	73	10,890	14.9
1963	6,722	88	.01	83	12,443	14.9
2. United Kingdom						
1953	139	4	.03	-	-	-
1954	150	4	.03	-	-	-
1955	74	3	.04	-	-	-
1956	69	2	.03	-	-	-
1957	70	3	.04	-	-	-
1958	133	4	.03	1	146	14.9
1959	75	3	.04	-	-	-
1960	68	4	.05	-	-	-
1961	150	5	.03	*	51	15.1
1962	57	2	.04	-	-	-
1963	46	3	.06	1	132	15.0
3. United States						
1953	1,998	42	.02	42	6,278	15.0
1954	1,734	37	.02	37	5,483	15.0
1955	1,735	38	.02	37	5,622	15.0
1956	1,674	36	.02	35	5,380	15.3
1957	1,989	41	.02	41	6,173	15.2
1958	1,899	39	.02	39	5,880	15.0
1959	1,725	36	.02	35	5,270	15.0
1960	1,334	28	.02	27	4,043	15.2
1961	1,335	28	.02	28	4,137	15.0
1962	1,424	33	.02	33	4,996	15.0
1963	1,244	29	.02	29	4,417	15.5

Table 15
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	
				(000)		
<u>4. Germany, Fed. Rep. of</u>						
1953	3,320	33	.01	32	4,822	15.0
1954	2,734	28	.01	27	4,083	15.0
1955	2,758	26	.01	25	3,819	15.0
1956	3,210	29	.01	28	4,215	15.0
1957	3,047	28	.01	27	4,030	15.0
1958	2,805	27	.01	27	3,990	15.0
1959	3,594	31	.01	31	4,519	14.8
1960	3,466	33	.01	30	4,498	15.0
1961	3,698	37	.01	34	5,018	14.7
1962	4,130	46	.01	40	5,894	14.7
1963	5,432	57	.01	54	7,894	14.7

(a) Beginning in 1964 included in s.c. 404-99

Table 16

Imports: Soda, bisulphate of, or nitre cake, s.c. 8348^(a)

Tariff Item 208b

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	
				(000)		
<u>1. Total</u>						
1953	2,351	61	.03	59	11,771	20.0
1954	2,393	65	.03	65	13,047	20.0
1955	2,492	58	.02	58	11,510	20.0
1956	2,929	66	.02	66	13,250	20.0
1957	3,656	84	.02	83	16,631	20.0
1958	4,286	87	.02	87	17,452	20.0
1959	4,558	92	.02	92	18,129	19.8
1960	4,253	86	.02	86	17,107	19.8
1961	4,698	100	.02	100	19,903	19.8
1962	5,556	128	.02	126	25,121	20.0
1963	5,845	142	.02	142	28,358	20.0
1964	6,945	163	.02	163	32,609	20.0
<u>2. United States</u>						
1953	2,311	59	.03	59	11,771	20.0
1954	2,393	65	.03	65	13,047	20.0
1955	2,472	58	.02	58	11,510	20.0
1956	2,929	66	.02	66	13,250	20.0
1957	3,636	83	.02	83	16,631	20.0
1958	4,286	87	.02	87	17,452	20.0
1959	4,547	92	.02	92	18,129	19.8
1960	4,253	86	.02	86	17,107	19.8
1961	4,698	100	.02	100	19,903	19.8
1962	5,556	128	.02	128	25,121	19.7
1963	5,845	142	.02	142	28,358	20.0
1964	6,945	163	.02	163	32,609	20.0

(a) Beginning in 1964 renumbered as s.c. 403-65

Table 17

Imports: Zinc, sulphate of, s.c. 8279^(a)

Tariff Item 208s

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	2,530	143	.06	50	10,005	20.0
1954	2,814	124	.04	38	7,605	20.0
1955	2,829	144	.05	64	12,803	20.0
1956	2,378	117	.05	27	5,300	20.0
1957	3,063	139	.05	32	6,308	20.0
1958	1,973	90	.05	30	5,951	20.0
1959	2,041	85	.04	26	5,183	20.0
1960	1,771	75	.04	31	6,264	19.9
1961	1,808	78	.04	18	3,541	20.0
1962	3,003	148	.05	43	8,559	19.9
1963	3,363	178	.05	51	9,641	19.0
1964	3,030	178	.06	21	4,024	18.9

2. United Kingdom

1953	1,451	67	.05	-	-	-
1954	1,791	72	.04	-	-	-
1955	1,286	62	.05	-	-	-
1956	1,459	68	.05	-	-	-
1957	2,136	79	.04	-	-	-
1958	1,003	37	.04	-	-	-
1959	1,206	42	.03	-	-	-
1960	890	32	.04	-	-	-
1961	1,232	44	.04	-	-	-
1962	1,608	77	.05	-	-	-
1963	2,239	95	.04	-	-	-
1964	2,231	115	.05	-	-	-

Table 17
(Cont'd)

Year	Total Imports		Unit	Dutiable	Duty	Duty as
	lb.	\$	Value	Value	Collected	p.c. of
	(000)	(000)	\$/lb.	\$	\$	Dutiable
				(000)		Value
3. United States						
1953	1,079	76	.07	50	10,005	20.0
1954	579	39	.07	25	5,042	20.0
1955	910	58	.06	50	9,930	20.0
1956	385	26	.07	9	1,856	20.0
1957	415	38	.09	12	2,388	20.0
1958	291	23	.08	7	1,390	20.0
1959	193	17	.09	10	1,930	20.0
1960	183	16	.09	7	1,300	19.6
1961	155	13	.09	5	1,082	20.0
1962	302	28	.09	9	1,770	20.0
1963	788	63	.08	43	8,195	18.9
1964	456	40	.09	17	3,211	19.3
4. Belgium & Luxembourg						
1953	-	-	-	-	-	-
1954	399	10	.03	10	2,075	20.0
1955	547	19	.03	14	2,750	20.0
1956	243	9	.04	8	1,559	20.0
1957	171	10	.06	7	1,450	20.0
1958	363	14	.04	14	2,851	20.0
1959	495	22	.04	12	2,330	20.0
1960	642	24	.04	24	4,729	20.0
1961	369	18	.05	12	2,459	20.0
1962	201	12	.06	11	2,260	19.8
1963	284	16	.06	7	1,446	20.0
1964	209	14	.07	5	813	17.4
5. Germany, Fed. Rep. of						
1953	-	-	-	-	-	-
1954	44	2	.06	2	488	20.0
1955	86	5	.06	1	123	19.9
1956	292	14	.05	9	1,885	20.0
1957	341	13	.04	12	2,470	20.0
1958	271	14	.05	8	1,502	20.0
1959	64	3	.05	3	507	20.0
1960	45	3	.07	1	235	20.0
1961	53	3	.05	-	-	-
1962	892	31	.04	23	4,529	20.0
1963	53	4	.07	-	-	-
1964	133	9	.07	-	-	-

(a) Beginning in 1964 renumbered as s.c. 403-71

Table 18

Imports: Bismuth salts, s.c. 8291(a)

Tariff Item 208t and 711

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u> (000)	<u>\$</u> (000)	<u>\$/lb.</u>	<u>\$</u> (000)	<u>\$</u>	
<u>1. Total</u>						
1953	..	19	..	19	2,916	15.4
1954	..	31	..	30	4,618	15.3
1955	..	22	..	18	2,798	15.3
1956	..	21	..	21	3,244	15.3
1957	..	25	..	25	3,822	15.5
1958	..	21	..	21	3,161	15.4
1959	10	26	2.57	26	4,005	15.3
1960	10	26	2.58	26	4,112	15.8
1961	14	40	2.77	40	6,341	15.9
1962	11	29	2.63	29	5,212	17.7
1963	7	19	2.82	19	3,015	15.7
<u>2. United Kingdom</u>						
1953	..	17	..	17	2,569	15.0
1954	..	18	..	17	2,549	15.0
1955	..	17	..	14	2,057	15.0
1956	..	18	..	18	2,667	15.0
1957	..	22	..	22	3,342	15.0
1958	..	18	..	18	2,674	15.0
1959	10	24	2.50	24	3,565	15.0
1960	8	19	2.34	19	2,866	15.0
1961	13	33	2.54	33	4,898	15.0
1962	11	28	2.58	28	4,956	17.7
1963	6	16	2.62	16	2,457	15.0
<u>3. United States</u>						
1953	..	2	..	2	347	18.7
1954	..	13	..	13	2,069	15.6
1955	..	5	..	5	741	16.3
1956	..	3	..	3	577	17.1
1957	..	2	..	2	480	20.0
1958	..	3	..	3	487	17.9
1959	1	2	3.52	2	440	18.8
1960	2	7	3.60	7	1,246	18.1
1961	2	7	4.65	7	1,443	20.0
1962	*	1	4.31	1	256	18.6
1963	1	3	5.07	3	558	20.0

(a) Beginning in 1964 included in s.c. 404-99

Table 19

Imports: Potash, nitrate, or saltpetre, s.c. 8331(a)

Tariff Item 209

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	1,208	72	.06	-	-	-
1954	989	59	.06	-	-	-
1955	1,240	81	.07	-	-	-
1956	1,091	61	.06	-	-	-
1957	1,046	57	.05	-	-	-
1958	1,359	82	.06	-	-	-
1959	1,483	104	.07	-	-	-
1960	1,483	108	.07	*	78	19.9
1961	1,833	146	.08	1	183	15.0
1962	1,825	139	.08	-	-	-
1963	1,702	135	.08	-	-	-
1964	1,768	133	.08	-	-	-
<u>2. United States</u>						
1953	263	19	.07	-	-	-
1954	203	15	.08	-	-	-
1955	215	18	.08	-	-	-
1956	134	9	.06	-	-	-
1957	67	6	.09	-	-	-
1958	54	3	.06	-	-	-
1959	60	5	.08	-	-	-
1960	85	7	.08	*	78	19.9
1961	144	11	.08	1	183	15.0
1962	1	*	.57	-	-	-
1963	121	7	.06	-	-	-
1964	309	16	.05	-	-	-
<u>4. Germany, Fed. Rep. of</u>						
1953	796	43	.05	-	-	-
1954	720	40	.06	-	-	-
1955	778	44	.06	-	-	-
1956	788	42	.05	-	-	-
1957	859	44	.05	-	-	-
1958	1,102	68	.06	-	-	-
1959	1,334	95	.07	-	-	-
1960	1,368	99	.07	-	-	-
1961	1,597	128	.08	-	-	-
1962	1,291	109	.08	-	-	-
1963	1,198	105	.09	-	-	-
1964	1,245	103	.08	-	-	-

(a) Beginning in 1964 renumbered as s.c. 403-88

Table 20

Imports: Nitrate of soda or cubic nitre, s.c. 8157^(a)

Tariff Item 210e

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u> <u>p.c. of</u> <u>Dutiable</u> <u>Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	¢/lb.	¢	¢	
				(000)		
<u>1. Total</u>						
1953	40,104	1,043	.03	-	-	-
1954	35,939	795	.02	-	-	-
1955	42,853	928	.02	-	-	-
1956	55,059	1,208	.02	-	-	-
1957	51,196	1,085	.02	-	-	-
1958	45,456	1,011	.02	-	-	-
1959	43,368	880	.02	2	235	12.5
1960	36,566	810	.02	2	240	12.5
1961	32,713	826	.03	*	27	12.6
1962	34,036	921	.03	*	58	12.4
1963	33,498	893	.03	2	235	12.5
1964	40,419	1,080	.03	-	-	-
<u>2. United States</u>						
1953	39,135	1,015	.03	-	-	-
1954	34,187	740	.02	-	-	-
1955	42,076	906	.02	-	-	-
1956	54,220	1,185	.02	-	-	-
1957	50,272	1,059	.02	-	-	-
1958	43,896	968	.02	-	-	-
1959	40,447	817	.02	2	235	12.5
1960	34,361	756	.02	2	240	12.5
1961	21,264	544	.03	-	-	-
1962	24,397	659	.03	-	-	-
1963	19,024	503	.03	-	-	-
1964	23,193	633	.03	-	-	-

Table 20
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>¢</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	¢/lb.	¢	¢	Dutiable
				(000)		Value
<u>3. Chile</u>						
1953	922	26	.03	-	-	-
1954	1,707	53	.03	-	-	-
1955	645	17	.03	-	-	-
1956	760	20	.03	-	-	-
1957	761	20	.03	-	-	-
1958	1,491	40	.03	-	-	-
1959	2,898	63	.02	-	-	-
1960	2,200	54	.02	-	-	-
1961	11,323	278	.02	-	-	-
1962	7,829	207	.03	-	-	-
1963	14,354	386	.03	2	235	12.5
1964	17,163	444	.03	-	-	-

(a) Beginning in 1964 renumbered as s.c. 416-33

Table 21

Imports: Soda, nitrite of, s.c. 8357^(a)

Tariff Item 210 and 851

Year	Total Imports		Unit Value \$/lb.	Dutiable Value \$ (000)	Duty Collected \$	Duty as p.c. of Dutiable Value
	lb. (000)	\$ (000)				
<u>1. Total</u>						
1953	961	40	.04	3	345	12.5
1954	1,148	48	.04	7	991	13.3
1955	1,517	63	.04	24	3,261	13.4
1956	1,281	51	.04	5	763	13.9
1957	1,162	51	.04	12	1,443	12.5
1958	1,483	60	.04	21	2,662	12.5
1959	1,628	71	.04	43	5,386	12.6
1960	1,625	68	.04	42	5,307	12.5
1961	2,175	89	.04	64	8,062	12.6
1962	2,272	97	.04	71	8,877	12.5
1963	2,132	88	.04	51	6,301	12.5
<u>2. United Kingdom</u>						
1953	868	35	.04	-	-	-
1954	916	36	.04	-	-	-
1955	974	38	.04	-	-	-
1956	1,149	45	.04	-	-	-
1957	930	40	.04	-	-	-
1958	960	39	.04	-	-	-
1959	693	28	.04	-	-	-
1960	626	25	.04	-	-	-
1961	601	25	.04	-	-	-
1962	601	26	.04	-	-	-
1963	849	37	.04	-	-	-
<u>3. United States</u>						
1953	83	5	.05	2	299	12.5
1954	108	7	.07	5	676	12.5
1955	147	10	.07	10	1,236	12.5
1956	9	1	.12	1	126	12.4
1957	38	4	.11	4	516	12.5
1958	102	7	.07	6	800	12.5
1959	291	22	.07	22	2,735	12.7
1960	135	12	.09	11	1,391	12.5
1961	130	12	.09	12	1,511	12.6
1962	99	11	.11	11	1,335	12.6
1963	23	3	.14	3	377	12.0

Table 21
(Cont'd)

Year	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	<u>(000)</u>	<u>(000)</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Dutiable</u>
				<u>(000)</u>		<u>Value</u>
<u>4. Germany, Fed. Rep. of</u>						
1953	11	*	.03	*	46	12.6
1954	97	3	.04	1	140	12.5
1955	337	12	.04	12	1,635	13.2
1956	90	3	.04	3	425	12.5
1957	194	7	.04	7	927	12.5
1958	421	15	.04	15	1,862	12.5
1959	644	21	.03	21	2,651	12.5
1960	754	28	.04	28	3,454	12.5
1961	1,444	52	.04	52	6,551	12.6
1962	967	38	.04	38	4,721	12.5
1963	794	31	.04	30	3,759	12.5

(a) Beginning in 1964 included in s.c. 404-99

Table 22

Imports: Lead, nitrate of, not ground, s.c. 8294^(a)

Tariff Item 488

Year	Total Imports		Unit	Dutiable	Duty	Duty as
	lb.	\$	Value	Value	Collected	p.c. of
	(000)	(000)	\$/lb.	\$	\$	Dutiable
				(000)		Value
<u>1. Total</u>						
1953	150	22	.15	8	838	10.0
1954	238	35	.15	9	915	10.0
1955	314	48	.15	9	881	10.0
1956	282	46	.16	9	913	10.0
1957	235	36	.15	9	852	10.0
1958	209	27	.13	7	726	10.0
1959	256	33	.13	8	838	10.0
1960	165	23	.14	10	986	10.0
1961	208	27	.13	7	673	10.0
1962	185	22	.12	3	285	10.0
1963	138	15	.11	-	-	10.0
<u>2. United Kingdom</u>						
1953	108	14	.13	-	-	-
1954	186	25	.14	-	-	-
1955	264	39	.15	-	-	-
1956	228	36	.16	-	-	-
1957	197	27	.14	-	-	-
1958	175	20	.11	-	-	-
1959	216	24	.11	-	-	-
1960	119	13	.11	-	-	-
1961	177	20	.11	-	-	-
1962	173	19	.11	-	-	-
1963	138	15	.11	-	-	-
<u>3. United States</u>						
1953	42	8	.20	8	838	10.0
1954	52	9	.18	9	915	10.0
1955	50	9	.18	9	881	10.0
1956	54	10	.18	9	913	10.0
1957	38	9	.22	9	852	10.0
1958	35	7	.21	7	726	10.0
1959	40	8	.21	8	838	10.0
1960	46	10	.21	10	986	10.0
1961	31	7	.22	7	673	10.0
1962	11	3	.25	3	285	10.0
1963	-	-	-	-	-	-

(a) Beginning in 1964 included in s.c. 404-99

Table 23

Imports: Nitrate compounds, n.o.p., for the manufacture of explosives, s.c. 8132^(a)

Tariff Item 664a

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>
	(000)	(000)	\$/lb.
	<u>1. Total</u>		
1953	798	83	.10
1954	695	78	.11
1955	839	95	.11
1956	1,116	127	.11
1957	1,092	111	.10
1958	523	62	.12
1959	717	82	.11
1960	613	68	.11
1961	567	70	.12
1962	403	50	.12
1963	436	59	.14
	<u>2. United Kingdom</u>		
1953	67	6	.09
1954	34	4	.11
1955	70	8	.11
1956	75	9	.12
1957	84	9	.11
1958	22	3	.12
1959	78	8	.11
1960	78	7	.09
1961	40	5	.12
1962	52	4	.08
1963	52	7	.14
	<u>3. United States</u>		
1953	731	77	.11
1954	613	67	.11
1955	769	87	.11
1956	1,041	118	.11
1957	768	89	.12
1958	501	59	.12
1959	639	74	.12
1960	535	61	.11
1961	526	66	.12
1962	351	46	.13
1963	385	52	.13

(a) Beginning in 1964 included in s.c. 404-99

Table 24

Imports: Soda phosphate, n.o.p., s.c. 8359^(a)

Tariff Items 208t, 711 and 729

Year	Total Imports		Unit	Dutiable	Duty	Duty as
	lb.	\$	Value	Value	Collected	p.c. of
	(000)	(000)	\$/lb.	\$	\$	Dutiable
<u>1. Total</u>						
1953	9,399	762	.08	746	137,822	18.5
1954	5,386	500	.09	467	83,144	17.8
1955	3,245	351	.11	324	58,774	18.1
1956	4,729	493	.10	477	88,752	18.6
1957	6,478	646	.10	623	118,387	19.0
1958	5,165	647	.13	638	120,573	18.9
1959	6,840	824	.12	815	150,367	18.5
1960	7,315	885	.12	853	156,171	18.3
1961	7,830	1,065	.14	1,029	185,844	18.1
1962	11,128	1,375	.12	1,351	258,906	19.2
1963	7,257	1,032	.14	996	184,275	18.5
<u>2. United Kingdom</u>						
1953	47	15	.33	-	-	-
1954	68	16	.24	-	-	-
1955	22	14	.62	-	-	-
1956	11	6	.57	-	-	-
1957	15	10	.66	-	-	-
1958	13	7	.51	-	-	-
1959	15	7	.51	-	-	-
1960	12	8	.65	-	-	-
1961	11	9	.79	-	-	-
1962	10	7	.75	-	-	-
1963	13	9	.68	-	-	-
<u>3. United States</u>						
1953	9,341	744	.08	744	137,384	18.5
1954	5,315	483	.09	466	83,031	17.8
1955	3,217	336	.10	323	58,563	18.1
1956	4,713	486	.10	477	88,598	18.6
1957	6,461	636	.10	622	118,330	19.0
1958	5,132	638	.12	636	120,276	18.9
1959	6,770	805	.12	803	148,043	18.4
1960	7,149	857	.12	833	152,991	18.4
1961	7,766	1,047	.13	1,020	184,043	18.1
1962	11,037	1,352	.12	1,334	255,129	19.1
1963	7,152	1,007	.14	980	180,999	18.5

(a) Beginning in 1958 includes former s.c. 8367; beginning in 1964 included in s.c. 403-99

Table 25

Imports: Sodium phosphate, tri-sodium, s.c. 8368 ^(a)

Tariff Items 208t and 711

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Dutiable</u>
				(000)		<u>Value</u>
<u>1. Total</u>						
1953	1,064	51	.05	42	8,306	19.9
1954	841	43	.05	37	7,459	19.9
1955	864	41	.05	37	7,183	19.5
1956	940	48	.05	42	8,324	19.9
1957	798	41	.05	38	7,657	19.9
1958	1,913	113	.06	113	21,476	19.1
1959	3,074	185	.06	184	33,843	18.4
1960	2,561	159	.06	158	28,224	17.8
1961	1,942	131	.07	127	21,751	17.1
1962	2,046	149	.07	142	24,821	17.5
1963	1,788	149	.08	147	24,348	16.6
1964	1,647	141	.09	137	21,905	15.9
<u>2. United States</u>						
1953	1,064	51	.05	42	8,306	19.9
1954	830	42	.05	37	7,376	20.0
1955	864	41	.05	37	7,183	19.5
1956	940	48	.05	42	8,324	19.9
1957	798	41	.05	38	7,657	19.9
1958	1,823	110	.06	110	20,924	19.0
1959	2,596	169	.07	169	30,788	18.2
1960	2,160	145	.07	145	25,456	17.6
1961	1,612	119	.07	115	19,320	16.8
1962	1,727	137	.08	130	22,042	17.0
1963	1,788	149	.08	147	24,348	16.6
1964	1,647	141	.09	137	21,905	15.9

^(a) Beginning in 1964 renumbered as s.c. 403-95

Table 26

Imports: Acid phosphate, not medicinal, s.c. 8371^(a)

Tariff Item 218

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>1. Total</u>						
1953	2,497	211	.08	202	50,494	25.0
1954	2,288	207	.09	180	44,965	25.0
1955	2,362	205	.09	190	47,606	25.0
1956	2,070	194	.09	157	39,334	25.0
1957	1,891	179	.09	173	43,323	25.0
1958	1,652	154	.09	154	38,393	25.0
1959	1,771	164	.09	164	40,958	25.0
1960	1,679	161	.10	157	39,301	25.0
1961	1,854	183	.10	183	45,662	24.9
1962	2,008	209	.10	208	51,917	25.0
1963	1,914	206	.11	206	51,457	25.0
<u>2. United Kingdom</u>						
1953	50	5	.10	-	-	-
1954	162	23	.14	-	-	-
1955	90	11	.12	-	-	-
1956	132	16	.12	-	-	-
1957	25	4	.15	-	-	-
1958-59	-	-	-	-	-	-
1960	10	1	.12	-	-	-
1961-63	-	-	-	-	-	-
<u>3. United States</u>						
1953	2,447	206	.08	202	50,494	25.0
1954	2,127	184	.09	180	44,965	25.0
1955	2,271	194	.09	190	47,606	25.0
1956	1,938	179	.09	157	39,334	25.0
1957	1,867	175	.09	173	43,323	25.0
1958	1,652	154	.09	154	38,393	25.0
1959	1,771	164	.09	164	40,958	25.0
1960	1,669	160	.10	157	39,301	25.0
1961	1,854	183	.10	183	45,662	24.9
1962	2,008	209	.10	208	51,917	25.0
1963	1,914	206	.11	206	51,457	25.0

(a) Beginning in 1964 included in s.c. 403-99 and s.c. 404-06

Table 27

Imports: Soda phosphate, di-sodium, s.c. 8367^(a)

Tariff Items 208t and 711

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Dutiable</u>
				(000)		<u>Value</u>
<u>1. Total</u>						
1953	115	8	.07	8	1,582	19.4
1954	83	6	.08	6	1,200	19.2
1955	60	5	.08	5	879	19.2
1956	83	6	.08	6	1,199	18.8
1957	209	16	.08	16	3,227	19.8
<u>2. United States</u>						
1953	115	8	.07	8	1,582	19.4
1954	83	6	.08	6	1,200	19.2
1955	60	5	.08	5	879	19.2
1956	83	6	.08	6	1,199	18.8
1957	209	16	.08	16	3,227	19.8

(a) Beginning in 1958 included in s.c. 8359

Table 28

Imports: Sodium phosphates n.e.s., s.c. 403-99(a)

Tariff Items 208t, 218, 711 and 729

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1964	7,183	886	.12	869	160,556	18.5
<u>2. United States</u>						
1964	7,044	862	.12	844	155,705	18.4
<u>3. Germany, Fed. Rep. of</u>						
1964	139	25	.18	25	4,851	19.7

(a) Prior to 1964 included in s.c. 8359 and 8371

Table 29

Imports: Potassium phosphates, s.c. 404-01(a)

Tariff Items 208t and 663b

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1964	3,586	574	.16	419	65,570	15.6
<u>2. United States</u>						
1964	3,586	574	.16	419	65,570	15.6

(a) Prior to 1964 included in s.c. 8163 and 8332

Table 30

Imports: Calcium phosphates, s.c. 404-06 (a)

Tariff Items 208t, 218,662, 663i and 711

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Value</u>
				(000)		
<u>1. Total</u>						
1964	38,318	1,756	.05	495	81,662	16.5
<u>2. United Kingdom</u>						
1964	15	2	.13	-	-	-
<u>3. United States</u>						
1964	33,901	1,620	.05	495	81,662	16.5
<u>4. Belgium & Luxembourg</u>						
1964	2,706	76	.03	-	-	-
<u>5. Germany, Fed. Rep. of</u>						
1964	10	2	.22	-	-	-
<u>6. Japan</u>						
1964	1,687	57	.03	-	-	-

(a) Prior to 1964 included in s.c. 7263, 8319 and 8371

Table 31

Imports: Soda, arseniate, binarseniate and stannate of, s.c. 8344^(a)

Tariff Items 210 and 851

Year	Total Imports		Unit Value	Dutiable Value	Duty Collected	Duty as p.c. of Dutiable Value
	lb. (000)	\$ (000)	\$/lb.	\$ (000)	\$	
<u>1. Total</u>						
1953	138	42	.30	35	4,345	12.5
1954	110	27	.25	22	2,747	12.5
1955	95	33	.35	30	3,738	12.5
1956	72	34	.48	33	4,172	12.5
1957	156	44	.28	33	4,107	12.5
1958	122	31	.26	25	3,173	12.5
1959	207	41	.20	29	3,594	12.5
1960	129	40	.31	34	4,324	12.9
1961	134	38	.29	31	4,008	12.7
1962	145	59	.41	53	6,793	12.9
1963	133	35	.26	27	3,369	12.5
<u>2. United Kingdom</u>						
1953	68	7	.10	-	-	-
1954	65	5	.08	-	-	-
1955	34	3	.08	-	-	-
1956	11	1	.09	-	-	-
1957	67	6	.08	-	-	-
1958	70	6	.08	-	-	-
1959	131	8	.06	-	-	-
1960	67	5	.08	-	-	-
1961	82	6	.08	-	-	-
1962	77	6	.08	-	-	-
1963	96	8	.08	1	116	12.5
<u>3. United States</u>						
1953	70	35	.50	35	4,345	12.5
1954	45	22	.49	22	2,747	12.5
1955	61	30	.49	30	3,738	12.5
1956	61	33	.55	33	4,172	12.5
1957	89	38	.43	33	4,107	12.5
1958	52	26	.50	25	3,173	12.5
1959	76	33	.43	29	3,594	12.5
1960	61	34	.56	34	4,324	12.9
1961	51	32	.62	31	4,008	12.7
1962	67	53	.78	53	6,793	12.9
1963	37	27	.73	26	3,253	12.5

(a) Beginning in 1964 included in s.c. 404-99 - "Metallic salts and peroxysalts of inorganic acids, n.e.s."

Table 32

Imports: Lead, arsenate of, s.c. 8293^(a)

Tariff Items 219a(2) and 791

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>
	lb. (000)	\$ (000)	\$/lb.
<u>1. Total</u>			
1953	45	9	.19
1954	98	16	.17
1955	131	23	.18
1956	134	26	.20
1957	73	15	.21
1958	130	26	.20
1959	84	18	.22
1960	65	14	.21
1961	58	12	.20
1962	43	8	.19
1963	64	12	.19
<u>2. United States</u>			
1953	45	9	.19
1954	98	16	.17
1955	101	19	.18
1956	134	26	.20
1957	73	15	.21
1958	130	26	.20
1959	73	17	.23
1960	57	12	.22
1961	54	11	.20
1962	28	5	.19
1963	51	10	.19
<u>3. France</u>			
1953-59	-	-	-
1960	9	1	.15
1961	4	1	.19
1962	11	2	.18
1963	13	2	.17

(a) Beginning in 1964 included in s.c. 418-40 - "Synthetic organics, n.e.s."

Table 33

Imports: Calcium arsenate or arsenate of lime, s.c. 8311^(a)

Tariff Items 219a(2) and 791

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>
	lb. (000)	\$ (000)	\$/lb.
	<u>1. Total</u>		
1953	237	16	.07
1954	163	9	.06
1955	565	29	.05
1956	12	1	.07
1957	81	5	.06
1958	86	6	.07
1959	88	3	.04
1960	68	3	.05
1961	179	15	.08
1962	188	10	.05
1963	132	8	.06
	<u>2. United States</u>		
1953	237	16	.07
1954	110	6	.06
1955	565	29	.05
1956	12	1	.07
1957	81	5	.06
1958	85	6	.07
1959	11	1	.10
1960	2	*	.10
1961	58	9	.15
1962	8	*	.07
1963	-	-	-

^(a) Beginning in 1964 included in s.c. 418-40 - "Synthetic organics, n.e.s."

Table 34

Imports: Soda ash or barilla, s.c. 8345^(a)

Tariff Items 208t, 210b(1) and 711

Tariff Items 208t, 210b(1) and 711						Duty as p.c. of Dutiable
<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	221,685	2,870	.01	2,869	461,393	16.1
1954	187,666	2,517	.01	2,511	380,125	15.1
1955	237,800	3,308	.01	3,304	518,151	15.7
1956	269,633	4,002	.01	3,983	610,383	15.3
1957	182,944	2,927	.02	2,903	421,641	14.5
1958	67,032	1,061	.02	1,057	133,794	12.7
1959	66,580	1,035	.02	1,032	149,119	14.4
1960	89,099	1,290	.01	1,272	185,227	14.6
1961	52,981	847	.02	828	118,508	14.3
1962	49,558	850	.02	837	122,135	14.6
1963	105,151	1,722	.02	1,708	255,977	15.0

2. United Kingdom

1953	97,368	1,233	.01	1,233	146,379	11.9
1954	91,714	1,196	.01	1,192	137,624	11.5
1955	78,518	1,057	.01	1,053	117,395	11.2
1956	59,385	841	.01	823	87,392	10.6
1957	34,611	526	.02	503	50,086	10.0
1958	33,957	529	.02	527	50,843	9.6
1959	24,868	389	.02	387	44,178	11.4
1960	36,398	465	.01	460	54,150	10.9
1961	12,892	178	.01	178	19,337	11.5
1962	5,742	75	.01	75	8,597	11.5
1963	6,917	92	.01	91	10,322	11.4

3. United States

1953	124,318	1,637	.01	1,636	315,014	19.3
1954	95,952	1,321	.01	1,319	242,501	18.4
1955	159,281	2,251	.01	2,251	400,756	17.8
1956	210,248	3,161	.02	3,160	522,991	16.6
1957	148,333	2,401	.02	2,400	371,555	15.5
1958	33,075	532	.02	530	82,951	15.7
1959	41,712	646	.02	646	104,941	16.3
1960	52,701	825	.02	813	131,077	16.1
1961	40,090	669	.02	651	99,171	15.2
1962	43,816	775	.02	762	113,538	14.9
1963	98,233	1,630	.02	1,617	245,655	15.2

(a) Beginning in 1964 included in s.c. 404-16 which is worded
"Sodium carbonate, including sal soda"

Table 35

Imports: Sodium carbonate, including sal soda, s.c. 404-16(a)

Tariff Items 208t, 210b(i), 210b(ii) and 711

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	lb.	\$	\$/lb.	\$	\$	
	(000)	(000)		(000)		
<u>1. Total</u>						
1964	241,209	3,891	.16	3,882	604,346	15.6
<u>2. United Kingdom</u>						
1964	461	11	.23	11	895	8.5
<u>3. United States</u>						
1964	240,748	3,880	.16	3,871	603,451	15.6

(a) Prior to 1964 included in s.c. 8345, 8361 and 8366

Table 36

Imports: Sodium sesquicarbonate, s.c. 404-19(a)

Tariff Item 208t

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	lb.	\$	\$/lb.	\$	\$	
	(000)	(000)		(000)		
<u>1. Total</u>						
1964	10,755	241	.02	238	35,633	14.9
<u>2. United Kingdom</u>						
1964	50	1	.03	-	-	-
<u>3. United States</u>						
1964	10,705	239	.02	238	35,633	14.9

(a) Prior to 1964 included in s.c. 8366

Table 37

Imports: Sal soda, s.c. 8361^(a)

Tariff Item 210b(ii)

Year	Total Imports		Unit	Dutiable	Duty	Duty as
	lb.	\$	Value	Value	Collected	p.c. of
	(000)	(000)	\$/lb.	\$	\$	Dutiable
				(000)		Value
<u>1. Total</u>						
1953	67	2	.06	2	197	11.2
1954	65	1	.02	1	175	13.8
1955	370	25	.07	25	1,081	4.3
1956	192	4	.02	4	494	12.8
1957	71	1	.02	1	147	10.9
1958	111	3	.02	3	278	10.6
1959	40	1	.02	1	84	10.1
1960	1,039	22	.02	22	2,104	9.7
1961	13	*	.03	*	28	7.1
1962	90	2	.02	2	172	8.2
1963	119	11	.09	11	357	3.3
<u>2. United Kingdom</u>						
1953	5	*	.01	*	10	17.5
1954	20	*	.02	*	40	11.7
1955	27	*	.01	*	51	14.0
1956	73	1	.01	1	135	14.9
1957	65	1	.01	1	130	13.9
1958	55	1	.01	1	110	14.0
1959	36	1	.01	1	73	13.8
1960	1,027	21	.02	21	2,054	9.6
1961	10	*	.01	*	20	14.2
1962	84	2	.02	2	155	9.2
1963	-	-	-	-	-	-
<u>3. United States</u>						
1953	62	2	.03	2	187	11.0
1954	45	1	.02	1	135	14.6
1955	343	24	.07	24	1,030	4.2
1956	120	3	.02	3	359	12.2
1957	6	*	.07	*	17	4.1
1958	56	2	.03	2	168	9.2
1959	4	*	.08	*	11	3.7
1960	12	*	.02	*	50	17.5
1961	3	*	.08	*	8	3.1
1962	6	*	.07	*	17	4.2
1963	119	11	.09	11	357	3.3

(a) Beginning in 1964 included in s.c. 404-16 "Sodium carbonate, including sal soda"

Table 38

Imports: Whiting, gilders' whiting and Paris white, s.c. 7269^(a)

Tariff Items 240 and 711

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u> <u>p.c. of</u> <u>Dutiable</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/cwt.	\$	\$	Value
				(000)		
<u>1. Total</u>						
1953	24,494	284	1.16	225	22,513	10.0
1954	21,649	254	1.17	196	19,551	10.0
1955	23,810	298	1.25	219	21,885	10.0
1956	22,712	276	1.21	197	19,693	10.0
1957	19,688	270	1.37	179	17,914	10.0
1958	22,242	294	1.32	203	20,293	10.0
1959	20,644	274	1.33	180	17,970	10.0
1960	17,669	251	1.42	183	18,302	10.0
1961	16,816	233	1.39	184	18,307	9.9
1962 ^(b)	16,284	259	1.59	204	20,641	10.1
1963	19,578	360	1.84	284	29,178	10.3
1964	17,281	270	1.56	205	20,759	10.1

2. United Kingdom

1953	8,585	55	.64	-	-	-
1954	8,354	57	.68	-	-	-
1955	6,825	52	.77	-	-	-
1956	6,352	51	.81	-	-	-
1957	6,157	50	.81	*	43	9.9
1958	7,206	57	.79	-	-	-
1959	6,268	54	.86	-	-	-
1960	5,259	45	.85	-	-	-
1961	5,226	39	.75	-	-	-
1962	4,530	40	.88	-	-	-
1963	4,708	50	1.05	-	-	-
1964	2,907	26	.91	-	-	-

Table 38
(Cont'd)

Year	Total Imports		Unit Value \$/cwt.	Dutiable Value \$ (000)	Duty Collected \$	Duty as p.c. of Dutiable Value
	lb. (000)	\$ (000)				

3. United States

1953	13,209	218	1.65	214	21,382	10.0
1954	10,537	188	1.78	186	18,636	10.0
1955	11,570	224	1.94	198	19,764	10.0
1956	11,086	208	1.88	180	18,046	10.0
1957	9,284	208	2.24	166	16,635	10.0
1958	9,659	220	2.27	186	18,589	10.0
1959	9,048	197	2.18	163	16,308	10.0
1960	8,420	189	2.25	170	17,046	10.0
1961	7,899	183	2.32	174	17,256	9.9
1962	8,485	209	2.46	194	19,705	10.1
1963	11,722	293	2.50	275	28,203	10.3
1964	12,089	233	1.93	199	20,164	10.1

4. France

1953	2,386	8	.32	8	767	10.0
1954	2,708	8	.31	8	848	10.0
1955	5,303	17	.33	17	1,748	10.0
1956	5,252	16	.30	16	1,571	10.0
1957	4,247	12	.29	12	1,236	10.0
1958	5,376	18	.33	17	1,704	10.0
1959	5,328	23	.42	17	1,661	10.0
1960	3,991	16	.41	13	1,256	10.0
1961	3,692	11	.29	11	1,051	10.0
1962	3,270	11	.33	9	936	10.1
1963	3,137	17	.55	9	859	10.0
1964	2,285	11	.47	6	595	9.8

(a) Beginning in 1964 renumbered as s.c. 427-75

(b) In 1962 this class becomes 8955 and contains former class 7269 and part of class 7270

Table 39

Imports: Lead, white, dry, s.c. 8173^(a)

Tariff Item 243

Year	Total Imports		Unit	Dutiable	Duty	Duty as
	lb.	\$	Value	Value	Collected	p.c. of
	(000)	(000)	\$/lb.	\$	\$	Dutiable
				(000)		Value
<u>1. Total</u>						
1953	71	11	.15	11	1,663	15.3
1954	49	7	.15	7	1,138	15.5
1955	75	10	.14	10	1,912	18.6
1956	83	10	.12	10	2,052	20.0
1957	4	1	.28	1	241	20.0
1958 ^(b)	53	9	.16	9	1,476	17.3
1959	28	3	.12	3	548	15.8
1960	408	48	.12	48	9,606	19.9
1961 ^(c)	767	100	.13	100	19,989	19.9
1962	175	28	.16	28	5,532	19.7
1963	26	5	.19	5	939	18.7
<u>2. United Kingdom</u>						
1953	67	10	.15	10	1,542	15.0
1954	45	7	.15	7	997	15.0
1955	16	3	.18	3	431	15.0
1956	-	-	-	-	-	-
1957	-	-	-	-	-	-
1958	32	5	.15	5	732	15.0
1959	26	3	.12	3	464	15.0
1960	7	1	.14	1	143	15.0
1961	7	1	.15	1	163	15.2
1962	14	2	.12	2	271	15.0
1963	9	1	.15	1	198	15.0

Table 39
(Cont'd)

Year	Total Imports		Unit	Dutiable	Duty	Duty as
	lb.	\$	Value	Value	Collected	p.c. of
	(000)	(000)	\$/lb.	\$	\$	Dutiable
				(000)		Value
<u>3. United States</u>						
1953	4	1	.15	1	121	19.9
1954	4	1	.18	1	141	20.1
1955	59	7	.13	7	1,481	20.0
1956	83	10	.12	10	2,052	20.0
1957	4	1	.28	1	241	20.0
1958	21	4	.18	4	744	20.2
1959	2	*	.22	*	83	21.6
1960	402	47	.12	47	9,463	20.0
1961	760	99	.13	99	19,826	20.0
1962	160	26	.16	26	5,261	20.0
1963	17	4	.22	4	741	20.0

(a) Beginning in 1964 included in s.c. 404-99, "Metallic salts and peroxy salts of inorganic acids, n.e.s."

(b) Beginning in 1958 includes former class 8174

(c) Beginning in January 1962, s.c. 8173 is replaced by s.c. 8174, same wording, and s.c. 8971, "Paste paints including white lead and paint colours in oil"

Imports: Lead, white, ground in oil, s.c. 8174^(a)

Tariff Item 244

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	1	*	.31	*	62	19.7
1954	1	*	.30	*	59	19.2
1955	-	-	-	-	-	-
1956	6	1	.23	1	345	25.0
1957	5	1	.20	1	258	25.0
<u>2. United Kingdom</u>						
1953	1	*	.30	*	44	18.2
1954	1	*	.30	*	45	17.9
1955	-	-	-	-	-	-
1956	-	-	-	-	-	-
1957	-	-	-	-	-	-
<u>3. United States</u>						
1953	*	*	.33	*	18	25.0
1954	*	*	.32	*	14	25.0
1955	-	-	-	-	-	-
1956	6	1	.23	1	345	25.0
1957	5	1	.20	1	258	25.0

(a) This class was discontinued as of January 1, 1958; subsequent imports of lead, white, ground in oil, under tariff item 244, are included with s.c. 8173

Table 41

Imports: Lead, white, s.c. 8173 and s.c. 8174^(a)

Tariff Items 243 and 244

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	72	11	.16	11	1,725	15.4
1954	50	8	.15	8	1,197	15.6
1955	75	10	.14	10	1,912	18.6
1956	89	12	.13	12	2,397	20.6
1957	9	2	.24	2	499	22.3
1958	53	9	.16	9	1,476	17.3
1959	28	3	.12	3	548	15.8
1960	408	48	.12	48	9,606	19.9
1961	767	100	.13	100	19,989	19.9
1962	175	28	.16	28	5,532	19.7
1963	26	5	.19	5	939	18.7
<u>2. United Kingdom</u>						
1953	68	11	.15	11	1,586	15.1
1954	46	7	.15	7	1,042	15.1
1955	16	3	.18	3	431	15.0
1956	-	-	-	-	-	-
1957	-	-	-	-	-	-
1958	32	5	.15	5	732	15.0
1959	26	3	.12	3	464	15.0
1960	7	1	.14	1	143	15.0
1961	7	1	.15	1	163	15.2
1962	14	2	.12	2	271	15.0
1963	9	1	.15	1	198	15.0

Table 41
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	
				(000)		
<u>3. United States</u>						
1953	4	1	.16	1	139	20.5
1954	4	1	.18	1	155	20.4
1955	59	7	.13	7	1,481	20.0
1956	89	12	.13	12	2,397	20.6
1957	9	2	.24	2	499	22.3
1958	21	4	.18	4	744	20.2
1959	2	*	.22	*	83	21.6
1960	402	47	.12	47	9,463	20.0
1961	760	99	.13	99	19,826	20.0
1962	160	26	.16	26	5,261	20.0
1963	17	4	.22	4	741	20.0

(a) Beginning in 1964 included in s.c. 404-99

Imports: Barium carbonate, s.c. 404-27(a)

Tariff Item 208t

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1964	8,682	392	.05	366	53,897	14.7
<u>2. United Kingdom</u>						
1964	98	5	.05	2	236	15.0
<u>3. United States</u>						
1964	235	27	.12	18	1,643	9.3
<u>4. Belgium & Luxembourg</u>						
1964	182	8	.04	8	1,168	15.0
<u>5. Germany, Fed. Rep. of</u>						
1964	8,068	349	.04	339	50,850	15.0
<u>6. China, Communist</u>						
1964	100	3	.03	-	-	-

(a) Prior to 1964 in s.c. 8415

Table 43

Imports: Sodium bicarbonate, s.c. 8346^(a)

Tariff Item 207

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	15,327	286	.02	178	22,300	12.5
1954	16,643	331	.02	225	28,072	12.5
1955	17,033	354	.02	226	28,228	12.5
1956	16,273	357	.02	242	30,283	12.5
1957	15,064	343	.02	242	30,189	12.5
1958	14,959	352	.02	258	32,226	12.5
1959	16,997	399	.02	297	37,198	12.5
1960	16,659	399	.02	287	35,926	12.5
1961	18,482	464	.03	359	44,839	12.5
1962	19,086	514	.03	392	49,249	12.6
1963	18,912	522	.03	401	50,102	12.5
1964	19,626	530	.03	406	50,816	12.5
<u>2. United Kingdom</u>						
1953	6,228	104	.02	-	-	-
1954	5,975	102	.02	-	-	-
1955	6,958	126	.02	-	-	-
1956	5,910	107	.02	-	-	-
1957	5,187	97	.02	-	-	-
1958	4,603	89	.02	-	-	-
1959	5,116	101	.02	-	-	-
1960	4,949	100	.02	-	-	-
1961	4,394	89	.02	-	-	-
1962	4,450	107	.02	-	-	-
1963	4,253	111	.03	-	-	-
1964	4,579	115	.03	-	-	-
<u>3. United States</u>						
1953	9,099	182	.02	178	22,300	12.5
1954	10,668	229	.02	225	28,072	12.5
1955	10,075	228	.02	226	28,228	12.5
1956	10,363	250	.02	242	30,283	12.5
1957	9,877	246	.02	242	30,189	12.5
1958	10,356	262	.03	258	32,226	12.5
1959	11,881	298	.03	297	37,198	12.5
1960	11,709	298	.03	287	35,926	12.5
1961	14,088	375	.03	359	44,839	12.5
1962	14,636	407	.03	392	49,249	12.6
1963	14,659	411	.03	401	50,102	12.5
1964	15,047	415	.03	406	50,816	12.5

(a) Beginning in 1964 renumbered as s.c. 404-17

Table 44

Imports: Potash, bicarbonate of, s.c. 8325(a)

Tariff Items 208t and 711

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>1. Total</u>						
1953	19	3	.14	1	207	15.0
1954	9	1	.13	*	15	14.7
1955	11	2	.14	*	31	14.9
1956	17	2	.13	1	77	15.1
1957	20	3	.13	*	32	14.9
<u>2. United Kingdom</u>						
1953	9	1	.13	-	-	-
1954	9	1	.13	-	-	-
1955	10	1	.13	-	-	-
1956	13	2	.13	-	-	-
1957	17	2	.13	-	-	-
<u>3. United States</u>						
1953	10	2	.16	1	207	15.0
1954	1	*	.20	*	15	14.7
1955	1	*	.21	*	31	14.9
1956	2	*	.17	*	38	15.1
1957	-	-	-	-	-	-
<u>Germany, Fed. Rep. of</u>						
1953-55	-	-	-	-	-	-
1956	3	*	.08	*	39	15.1
1957	2	*	.09	*	32	14.9

(a) Beginning in 1958 included in s.c. 8332

Table 45

Imports: Potash and pearl ash, s.c. 8323^(a)

Tariff Items 209a1 and 209a2

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	360	25	.07	1	154	12.5
1954	256	23	.09	1	72	12.6
1955	474	40	.09	*	6	12.0
1956	518	44	.09	6	727	12.5
1957	588	50	.08	-	-	-
1958	730	62	.09	12	1,521	12.5
1959	911	77	.08	14	2,047	15.0
1960	944	80	.08	*	40	14.9
1961	1,535	132	.09	1	94	17.1
1962	1,857	166	.09	*	68	15.2
1963	1,063	95	.09	1	121	14.4
1964	1,319	117	.09	2	335	15.2
<u>2. United States</u>						
1953	317	23	.07	1	154	12.5
1954	215	19	.09	1	72	12.6
1955	410	35	.09	*	6	12.0
1956	499	43	.09	6	727	12.5
1957	530	45	.08	-	-	-
1958	718	61	.08	12	1,521	12.5
1959	858	71	.08	14	2,047	15.0
1960	883	75	.09	*	40	14.9
1961	1,423	122	.09	1	94	17.1
1962	1,326	117	.09	*	68	15.2
1963	951	85	.09	1	121	14.4
1964	840	74	.09	2	335	15.2
<u>3. Germany, Fed. Rep. of</u>						
1953	-	-	-	-	-	-
1954	10	1	.07	-	-	-
1955	64	5	.08	-	-	-
1956	19	2	.08	-	-	-
1957	58	5	.09	-	-	-
1958	12	1	.09	-	-	-
1959	6	1	.10	-	-	-
1960	28	2	.08	-	-	-
1961	112	10	.09	-	-	-
1962	501	47	.09	-	-	-
1963	82	8	.09	-	-	-
1964	413	37	.09	-	-	-

(a) Beginning in 1964 renumbered as s.c. 404-21

Table 46

Imports: Sodium cyanide, s.c. 8354^(a)

Tariff Items 208 and 851

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	8,324	1,011	.12	-	-	-
1954	7,582	934	.12	-	-	-
1955	9,056	1,142	.13	-	-	-
1956	8,501	1,113	.13	-	-	-
1957	8,285	1,066	.13	-	-	-
1958	8,393	1,111	.13	-	-	-
1959	9,260	1,235	.13	6	968	15.0
1960	7,841	1,052	.13	-	-	-
1961	8,838	1,200	.14	-	-	-
1962	9,014	1,217	.14	-	-	-
1963	8,489	1,177	.14	-	-	-
1964	7,648	1,049	.14	14	2,061	14.6
<u>2. United Kingdom</u>						
1953	6,356	769	.12	-	-	-
1954	6,688	819	.12	-	-	-
1955	7,547	943	.12	-	-	-
1956	7,111	920	.13	-	-	-
1957	6,765	855	.13	-	-	-
1958	7,081	920	.13	-	-	-
1959	7,134	942	.13	-	-	-
1960	6,237	824	.13	-	-	-
1961	6,942	918	.13	-	-	-
1962	7,582	1,002	.13	-	-	-
1963	6,558	895	.14	-	-	-
1964	5,455	726	.13	-	-	-

Table 46
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>3. United States</u>						
1953	126	22	.18	-	-	-
1954	63	9	.14	-	-	-
1955	107	19	.18	-	-	-
1956	296	49	.17	-	-	-
1957	203	35	.17	-	-	-
1958	245	42	.17	-	-	-
1959	284	49	.17	6	968	15.0
1960	250	43	.17	-	-	-
1961	261	48	.18	-	-	-
1962	229	41	.18	-	-	-
1963	338	64	.19	-	-	-
1964	364	74	.20	7	1,203	16.7
<u>4. Germany, Fed. Rep. of</u>						
1953	755	88	.12	-	-	-
1954	781	99	.13	-	-	-
1955	1,314	169	.13	-	-	-
1956	977	129	.13	-	-	-
1957	1,264	168	.13	-	-	-
1958	1,021	140	.14	-	-	-
1959	1,775	231	.13	-	-	-
1960	1,256	168	.13	-	-	-
1961	989	139	.14	-	-	-
1962	1,026	141	.14	-	-	-
1963	1,241	169	.14	-	-	-
1964	1,457	201	.14	-	-	-

(a) Beginning in 1964 renumbered as s.c. 404-41

Table 47

Imports: Cyanide of potassium and cyanogen bromide, s.c. 8398^(a)

Tariff Items 208 and 851

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Value</u>
				(000)		
			<u>1. Total</u>			
1953	93	33	.36	-	-	-
1954	130	45	.35	-	-	-
1955	291	98	.34	-	-	-
1956	120	43	.36	-	-	-
1957	280	93	.33	-	-	-
1958	133	46	.34	-	-	-
1959	179	59	.33	6	866	15.0
1960	135	46	.34	-	-	-
1961	184	65	.36	-	-	-
1962	260	93	.36	-	-	-
1963	255	94	.37	-	-	-
			<u>2. United Kingdom</u>			
1953	79	28	.35	-	-	-
1954	102	35	.34	-	-	-
1955	115	38	.33	-	-	-
1956	58	19	.32	-	-	-
1957	163	52	.32	-	-	-
1958	61	19	.31	-	-	-
1959	104	32	.30	-	-	-
1960	59	18	.31	-	-	-
1961	55	17	.31	-	-	-
1962	164	52	.32	-	-	-
1963	84	27	.32	-	-	-

Table 47
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	
<u>3. United States</u>						
1953	7	3	.47	-	-	-
1954	10	5	.50	-	-	-
1955	27	11	.41	-	-	-
1956	49	20	.41	-	-	-
1957	33	13	.39	-	-	-
1958	56	21	.38	-	-	-
1959	70	26	.37	6	866	15.0
1960	46	18	.39	-	-	-
1961	92	37	.40	-	-	-
1962	94	40	.43	-	-	-
1963	112	47	.42	-	-	-
<u>4. Germany, Fed. Rep. of</u>						
1953	2	1	.34	-	-	-
1954	8	2	.24	-	-	-
1955	142	46	.33	-	-	-
1956	5	2	.32	-	-	-
1957	84	27	.32	-	-	-
1958	5	2	.37	-	-	-
1959	5	2	.33	-	-	-
1960	30	9	.32	-	-	-
1961	36	12	.32	-	-	-
1962	2	1	.35	-	-	-
1963	53	18	.34	-	-	-

(a) Beginning in 1964 included in s.c. 404-99

Imports: Soda, prussiate of, s.c. 8360^(a)

Tariff Items 210 and 851

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	520	63	.12	45	5,602	12.5
1954	721	77	.11	71	8,834	12.5
1955	769	86	.11	75	9,433	12.5
1956	644	69	.11	62	7,781	12.5
1957	684	73	.11	73	10,047	13.7
1958	566	61	.11	55	6,857	12.5
1959	588	64	.11	64	8,017	12.5
1960	624	69	.11	63	7,919	12.5
1961	690	83	.12	83	10,383	12.5
1962	840	105	.12	99	12,372	12.5
1963	604	75	.12	73	9,122	12.5
1964	937	119	.13	119	14,913	12.5
<u>2. United Kingdom</u>						
1953	129	18	.14	-	-	-
1954	45	6	.14	-	-	-
1955	45	6	.14	-	-	-
1956	45	6	.14	-	-	-
1957	-	-	-	-	-	-
1958	45	6	.14	-	-	-
1959	-	-	-	-	-	-
1960	45	6	.14	-	-	-
1961	-	-	-	-	-	-
1962	40	6	.15	-	-	-
1963	-	-	-	-	-	-
1964	-	-	-	-	-	-

Table 48
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	
<u>3. United States</u>						
1953	105	14	.14	14	1,771	12.5
1954	80	11	.13	11	1,340	12.6
1955	38	5	.14	5	662	12.5
1956	61	8	.14	8	1,053	12.5
1957	100	13	.13	13	1,669	12.5
1958	52	7	.14	7	920	12.5
1959	49	7	.14	7	844	12.5
1960	98	14	.14	14	1,758	12.5
1961	93	13	.14	13	1,622	12.6
1962	61	9	.15	9	1,141	12.5
1963	74	12	.16	10	1,229	12.5
1964	63	11	.17	11	1,322	12.4
<u>4. Belgium and Luxembourg</u>						
1953	154	16	.10	16	1,959	12.5
1954	358	35	.10	35	4,426	12.5
1955	409	42	.10	38	4,758	12.5
1956	254	26	.10	26	3,234	12.5
1957	224	23	.10	23	2,897	12.5
1958	293	30	.10	30	3,782	12.5
1959	362	40	.11	40	4,985	12.5
1960	336	35	.11	35	4,413	12.5
1961	330	36	.11	36	4,441	12.5
1962	486	55	.11	55	6,857	12.5
1963	420	48	.11	48	5,971	12.5
1964	490	56	.11	56	6,990	12.5
<u>5. Germany, Fed. Rep. of</u>						
1953	132	15	.11	15	1,872	12.5
1954	158	16	.10	16	2,032	12.5
1955	278	32	.12	32	4,013	12.5
1956	284	28	.10	28	3,494	12.5
1957	250	25	.10	25	3,115	12.5
1958	176	17	.10	17	2,155	12.5
1959	178	18	.10	18	2,189	12.5
1960	144	14	.10	14	1,748	12.5
1961	267	35	.13	35	4,320	12.5
1962	253	35	.14	35	4,374	12.5
1963	110	15	.14	15	1,922	12.5
1964	384	53	.14	53	6,601	12.5

(a) Beginning in 1964 renumbered as s.c. 404-45 with the wording changed to, "Sodium ferricyanide and ferrocyanide"

Table 49

Imports: Potash, red and yellow, prussiate of, s.c. 8330^(a)

Tariff Item 209c

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	97	22	.23	17	2,621	15.0
1954	20	7	.36	7	1,042	15.0
1955	28	9	.31	9	1,297	15.0
1956	34	10	.30	10	1,488	15.0
1957	27	9	.35	9	1,389	15.0
1958	24	7	.30	7	1,075	15.0
1959	17	6	.35	5	799	15.0
1960	21	7	.35	7	1,070	15.0
1961	13	6	.44	5	773	15.0
1962	20	9	.43	9	1,317	15.4
1963	33	13	.38	12	1,913	15.7
<u>2. United Kingdom</u>						
1953	31	5	.15	-	-	-
1954	*	*	.50	-	-	-
1955	-	-	-	-	-	-
1956	*	*	.79	-	-	-
1957	-	-	-	-	-	-
1958	-	-	-	-	-	-
1959	2	1	.49	1	82	15.0
1960	1	1	.52	1	87	15.0
1961	2	1	.52	1	87	15.1
1962	1	1	.56	1	93	15.0
1963	1	*	.41	*	34	15.0

Table 49
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	
<u>3. United States</u>						
1953	48	14	.29	14	2,083	15.0
1954	11	4	.41	4	651	15.0
1955	17	6	.37	6	926	15.0
1956	13	5	.43	5	801	15.0
1957	9	4	.49	4	616	15.0
1958	4	2	.52	2	278	15.0
1959	4	2	.55	2	373	15.0
1960	5	3	.54	3	398	15.1
1961	5	3	.63	3	506	15.0
1962	7	4	.56	4	598	15.9
1963	16	7	.43	7	993	15.0
<u>4. Germany, Fed. Rep. of</u>						
1953	-	-	-	-	-	-
1954	9	3	.30	3	391	15.0
1955	7	2	.25	2	249	15.0
1956	4	1	.31	1	192	15.0
1957	14	4	.29	4	581	15.0
1958	10	3	.27	3	402	15.0
1959	6	1	.22	1	198	15.0
1960	15	4	.27	4	585	15.0
1961	6	1	.22	1	180	15.0
1962	12	4	.34	4	626	15.0
1963	17	5	.32	5	886	16.6

(a) Beginning in 1964 included in s.c. 404-99

Table 50

Imports: Soda, silicate of, in crystals or in water solution,
s.c. 8362(a)

Tariff Items 210 and 851

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	4,927	170	.04	164	20,482	12.5
1954	5,162	185	.04	165	20,635	12.5
1955	5,423	210	.04	179	22,414	12.5
1956	6,038	247	.04	216	27,021	12.5
1957	7,233	321	.04	287	35,923	12.5
1958	7,489	348	.05	316	39,479	12.5
1959	9,946	435	.04	396	49,616	12.5
1960	10,320	465	.05	425	53,112	12.5
1961	10,644	522	.05	500	62,271	12.5
1962	10,507	528	.05	506	63,414	12.5
1963	8,460	419	.05	407	51,153	12.6
1964	5,812	287	.05	284	35,896	12.6
<u>2. United Kingdom</u>						
1953	243	6	.03	-	-	-
1954	668	20	.03	-	-	-
1955	1,007	29	.03	-	-	-
1956	1,010	29	.03	-	-	-
1957	1,121	33	.03	-	-	-
1958	997	32	.03	-	-	-
1959	1,230	38	.03	-	-	-
1960	1,290	41	.03	1	176	15.0
1961	664	23	.03	-	-	-
1962	461	18	.04	-	-	-
1963	370	13	.04	1	158	13.6
1964	174	7	.04	3	433	14.3

Table 50
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>3. United States</u>						
1953	4,684	164	.04	164	20,482	12.5
1954	4,493	165	.04	165	20,619	12.5
1955	4,415	181	.04	179	22,414	12.5
1956	5,029	218	.04	216	27,021	12.5
1957	6,112	288	.05	287	35,923	12.5
1958	6,471	315	.05	315	39,400	12.5
1959	8,470	389	.05	389	48,674	12.5
1960	8,732	414	.05	414	51,716	12.5
1961	9,739	487	.05	487	60,640	12.5
1962	9,958	506	.05	502	62,862	12.5
1963	8,002	402	.05	401	50,478	12.6
1964	5,550	278	.05	278	35,038	12.6
<u>4. France</u>						
1953-1957	-	-	-	-	-	-
1958	22	1	.03	1	79	12.5
1959	247	6	.03	6	942	12.5
1960	298	10	.03	10	1,220	12.5
1961	121	7	.06	7	858	12.5
1962	88	4	.05	4	552	12.5
1963	66	3	.05	3	416	12.5
1964	-	-	-	-	-	-

(a) Beginning in 1964 renumbered as s.c. 404-50, "Sodium silicates, including solutions"

Table 51

Imports: Zirconium silicate, s.c. 7015(a)

Tariff Item 246a

<u>Year</u>	<u>Total Imports</u>	<u>Total Imports</u>
	\$ (000)	\$ (000)
	<u>1. Total</u>	<u>2. United States</u>
1953	131	126
1954	136	128
1955	116	113
1956	194	183
1957	362	339
1958	148	125
1959	151	131
1960	162	144
1961	212	192
1962	220	188
1963	319	277

(a) Beginning in 1964 included in s.c. 404-99

Table 52

Imports: Potassium silicates, s.c. 404-56(a)

Tariff Item 208t

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	lb. (000)	\$ (000)	Value \$/lb.	Value \$(000)	Collected \$	
	<u>1. Total</u>					
1964	2,035	164	.08	164	24,766	15.1
	<u>2. United States</u>					
1964	2,035	164	.08	164	24,766	15.1

(a) Prior to 1964 included in s.c. 8332

Table 53

Imports: Borax, and fused borax known as borax glass, s.c. 8342^(a)

Tariff Items 208, 208f and 851

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Value</u>
				(000)		
<u>1. Total</u>						
1953	19,160	567	.03	-	-	-
1954	16,906	511	.03	-	-	-
1955	18,844	552	.03	-	-	-
1956	20,716	624	.03	-	-	-
1957	20,569	608	.03	-	-	-
1958	20,331	641	.03	-	-	-
1959	20,158	616	.03	-	-	-
1960	20,031	642	.03	-	-	-
1961	23,442	788	.03	-	-	-
1962	26,054	903	.03	18	3,237	18.2
1963	29,173	1,040	.04	20	4,161	20.6
1964	21,034	740	.04	10	1,653	17.2
<u>2. United States</u>						
1953	19,160	567	.03	-	-	-
1954	16,904	511	.03	-	-	-
1955	18,844	552	.03	-	-	-
1956	20,715	624	.03	-	-	-
1957	20,569	608	.03	-	-	-
1958	20,282	638	.03	-	-	-
1959	20,144	616	.03	-	-	-
1960	20,031	642	.03	-	-	-
1961	23,442	788	.03	-	-	-
1962	26,038	902	.03	18	3,237	18.2
1963	29,129	1,036	.04	20	4,161	20.6
1964	20,933	733	.04	10	1,653	17.2

(a) Beginning in 1964 renumbered as s.c. 404-58

Table 54

Imports: Soda, bichromate of, s.c. 8347^(a)

Tariff Items 210 and 851

Year	Total Imports		Unit	Dutiable	Duty	Duty as
	lb.	\$	Value	Value	Collected	p.c. of
	(000)	(000)	\$/lb.	\$	\$	Dutiable
				(000)		Value
<u>1. Total</u>						
1953	5,003	505	.10	291	36,330	12.5
1954	4,345	444	.10	236	29,504	12.5
1955	6,763	736	.11	401	50,085	12.5
1956	6,013	713	.12	323	40,332	12.5
1957	6,187	727	.12	386	48,202	12.5
1958	6,256	730	.12	433	54,163	12.5
1959	6,560	761	.12	541	67,468	12.5
1960	7,729	854	.11	577	72,125	12.5
1961	8,851	1,002	.11	641	80,340	12.5
1962	8,806	1,033	.12	674	84,699	12.5
1963	9,726	1,114	.11	727	91,121	12.5
1964	10,305	1,198	.12	848	105,959	12.5
<u>2. United Kingdom</u>						
1953	1,377	135	.10	-	-	-
1954	1,395	128	.09	-	-	-
1955	1,790	182	.10	-	-	-
1956	1,979	218	.11	-	-	-
1957	2,149	253	.12	-	-	-
1958	2,300	271	.12	-	-	-
1959	1,318	157	.12	-	-	-
1960	1,348	171	.13	-	-	-
1961	2,488	298	.12	-	-	-
1962	2,685	323	.12	-	-	-
1963	2,881	365	.13	-	-	-
1964	2,706	323	.12	-	-	-

Table 54
(Cont'd)

Year	Total Imports		Unit	Dutiable	Duty	Duty as
	lb.	\$	Value	Value	Collected	p.c. of
	(000)	(000)	\$/lb.	\$	\$	Dutiable
<u>3. United States</u>						
1953	2,678	284	.11	256	31,943	12.5
1954	2,496	268	.11	219	27,389	12.5
1955	4,373	487	.11	374	46,785	12.5
1956	3,176	392	.12	290	36,193	12.5
1957	3,557	421	.12	351	43,886	12.5
1958	3,835	446	.12	427	53,322	12.5
1959	5,012	579	.12	532	66,347	12.5
1960	6,248	669	.11	576	71,947	12.5
1961	6,292	695	.11	640	80,176	12.5
1962	5,814	681	.12	662	83,193	12.6
1963	6,328	700	.11	679	85,052	12.5
1964	7,239	837	.12	810	101,216	12.5
<u>4. Germany, Fed. Rep. of</u>						
1953	611	60	.10	35	4,387	12.5
1954	85	10	.12	10	1,230	12.5
1955	348	40	.11	26	3,300	12.5
1956	302	34	.11	33	4,139	12.5
1957	280	31	.11	31	3,850	12.5
1958	122	13	.11	7	841	12.5
1959	229	25	.11	9	1,121	12.5
1960	122	13	.11	*	29	12.7
1961	71	8	.12	1	164	12.5
1962	-	-	-	-	-	-
1963	-	-	-	-	-	-
1964	-	-	-	-	-	-
<u>5. Japan</u>						
1953-1959	-	-	-	-	-	-
1960	11	1	.11	1	149	12.5
1961	-	-	-	-	-	-
1962	22	2	.10	2	282	12.5
1963	11	1	.10	1	142	12.5
1964	44	4	.10	4	550	12.4

Table 54
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value \$/lb.</u>	<u>Dutiable Value \$ (000)</u>	<u>Duty Collected \$</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb. (000)</u>	<u>\$ (000)</u>				
<u>6. Poland</u>						
1953-1955	-	-	-	-	-	-
1956	4	*	.09	-	-	-
1957	40	4	.09	4	466	12.5
1958	-	-	-	-	-	-
1959	-	-	-	-	-	-
1960	-	-	-	-	-	-
1961	-	-	-	-	-	-
1962	284	26	.09	10	1,224	12.4
1963	507	47	.09	47	5,927	12.5
1964	352	34	.10	34	4,193	12.5

(a) Beginning in 1964 renumbered as s.c. 404-66

Table 55

Imports: Potash, bichromate of, crude, s.c. 8326^(a)

Tariff Items 208c and 209c

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u> <u>p.c. of</u> <u>Dutiable</u> <u>Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$	\$	
				(000)		
<u>1. Total</u>						
1953	259	37	.14	15	2,218	15.0
1954	303	42	.14	28	4,235	15.0
1955	255	39	.15	23	3,450	15.0
1956	341	55	.16	37	5,492	15.0
1957	314	52	.17	35	5,197	15.0
1958	274	45	.16	20	2,971	15.0
1959	264	43	.16	26	3,831	15.0
1960	259	45	.18	27	3,946	14.8
1961	329	58	.18	24	3,638	15.0
1962	624	101	.16	35	5,264	15.0
1963	448	80	.18	32	4,750	14.6
<u>2. United Kingdom</u>						
1953	50	7	.14	-	-	-
1954	46	6	.12	-	-	-
1955	18	3	.15	-	-	-
1956	73	11	.15	-	-	-
1957	35	5	.15	-	-	-
1958	65	10	.15	-	-	-
1959	45	7	.15	-	-	-
1960	85	15	.17	-	-	-
1961	130	22	.17	-	-	-
1962	370	55	.15	-	-	-
1963	192	33	.17	*	47	14.9

Table 55
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Value</u>
				(000)		
<u>3. United States</u>						
1953	208	30	.14	15	2,194	15.0
1954	255	36	.14	28	4,183	15.0
1955	233	35	.15	22	3,346	15.0
1956	257	42	.17	35	5,251	15.0
1957	253	43	.17	31	4,618	15.0
1958	194	33	.17	17	2,620	15.0
1959	206	35	.17	23	3,518	15.0
1960	169	30	.18	26	3,846	14.8
1961	195	34	.18	23	3,454	15.0
1962	228	42	.18	34	5,029	15.0
1963	256	47	.18	32	4,703	14.6
<u>4. Germany, Fed. Rep. of</u>						
1953	-	-	-	-	-	-
1954	2	*	.16	*	52	15.2
1955	4	1	.16	1	104	15.0
1956	11	2	.15	2	241	15.0
1957	26	4	.15	4	579	15.0
1958	15	2	.15	2	351	15.0
1959	13	2	.16	2	312	15.0
1960	4	1	.15	1	100	15.0
1961	4	1	.28	1	184	15.0
1962	26	4	.15	2	235	15.0
1963	-	-	-	-	-	-

(a) Beginning in 1964 included in s.c. 404-99

Table 56

Imports: Soda, antimonate of, s.c. 8370^(a)

Tariff Items 208t and 711

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u> <u>p.c. of</u> <u>Dutiable</u> <u>Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
				(000)		
<u>1. Total</u>						
1953	303	82	.27	76	11,448	15.0
1954	317	84	.27	84	12,645	15.0
1955	370	105	.28	105	15,737	15.0
1956	278	75	.27	75	11,317	15.0
1957	234	60	.26	60	9,033	15.0
1958	242	57	.24	57	8,513	15.0
1959	122	29	.23	29	4,291	15.0
1960	132	32	.24	32	4,831	15.0
1961	160	44	.27	44	6,526	15.0
1962	160	49	.31	49	7,380	15.0
1963	160	50	.31	50	7,557	15.0
<u>2. United States</u>						
1953	281	76	.27	76	11,448	15.0
1954	317	84	.27	84	12,645	15.0
1955	370	105	.28	105	15,737	15.0
1956	278	75	.27	75	11,317	15.0
1957	234	60	.26	60	9,033	15.0
1958	240	57	.24	57	8,513	15.0
1959	120	28	.23	28	4,188	15.0
1960	132	32	.24	32	4,831	15.0
1961	160	44	.27	44	6,526	15.0
1962	160	49	.31	49	7,380	15.0
1963	160	50	.31	50	7,557	15.0

^(a) Beginning in 1964 included in s.c. 404-99

Table 57

Imports: Metallic salts and peroxy salts of inorganic acids n.e.s.,
s.c. 404-99(a)

Tariff Items various

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1964	91,366	8,264	.09	4,438	680,212	15.3
<u>2. United Kingdom</u>						
1964	11,698	1,843	.16	239	37,847	15.9
<u>3. United States</u>						
1964	61,259	5,375	.09	3,404	522,140	15.3
<u>4. Germany, Fed. Rep. of</u>						
1964	12,140	558	.05	502	73,897	14.7
<u>5. Netherlands</u>						
1964	1,157	101	.09	68	9,907	14.5
<u>6. Japan</u>						
1964	1,424	34	.02	19	2,487	12.9

(a) Prior to 1964 included in various statistical classes

Imports: Radium and compounds, s.c. 8379(a)

Tariff Item 333

<u>Year</u>	<u>Total</u> \$	<u>United Kingdom</u> \$
1953	428,251	-
1954	282,133	124,789
1955	850,256	588,407
1956	301,597	260,493
1957	1,334,011	39,910
1958	528,288	131,252
1959	383,983	62,564
1960	302,125	142,530
1961	278,670	102,546
1962	227,738	93,726
1963	594,940	200,044
1964(b)	318,846	156,577

<u>Year</u>	<u>United States</u> \$	<u>Belgium & Luxembourg</u> \$
1953	340,051	88,200
1954	93,894	60,000
1955	261,849	-
1956	41,104	-
1957	1,075,455	216,006
1958	290,113	101,923
1959	321,419	-
1960	159,595	-
1961	165,902	-
1962	126,012	-
1963	394,896	-
1964	159,269	-

(a) Beginning in 1964 renumbered as s.c. 405-21

(b) In 1964, \$4,441 worth of dutiable Imports came from the U.S.; the duty collected was \$885.

Imports: Radioactive elements and radioactive isotopes n.e.s.;
and heavy water, s.c. 405-32^(a)

Tariff Items 237 and 237a

<u>Year</u>	<u>Total Imports</u> \$ (000)	<u>Dutiable Value</u> \$ (000)	<u>Duty Collected</u> \$	<u>Duty as p.c. of Dutiable Value</u>
<u>1. Total</u>				
1964	1,657	46	7,938	17.2
<u>2. United Kingdom</u>				
1964	140	-	-	-
<u>3. United States</u>				
1964	1,497	46	7,938	17.2
<u>4. France</u>				
1964	5	-	-	-
<u>5. Germany, Fed. Rep. of</u>				
1964	6	-	-	-
<u>6. Italy</u>				
1964	5	-	-	-

^(a) Prior to 1964 included in s.c. 8415

Table 60

Imports: Ammonia compounds, n.o.p., s.c. 8264^(a)

Tariff Items 208t and 711

Year	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	Duty as p.c. of Dutiable Value
	lb.	\$	Value	Value	Collected	
	(000)	(000)	\$/lb.	\$	\$	
<u>1. Total</u>						
1953	5,818	230	.04	189	32,138	17.0
1954	6,413	283	.04	218	36,876	16.9
1955	6,237	324	.05	268	43,986	16.4
1956	6,776	340	.05	286	48,445	17.0
1957	9,250	402	.04	306	52,321	17.1
1958	6,886	512	.07	377	66,203	17.5
1959	7,908	530	.07	429	74,528	17.4
1960	6,475	650	.10	446	78,230	17.5
1961	7,094	717	.10	459	78,366	17.1
1962	7,287	613	.08	392	67,599	17.2
1963	7,308	800	.11	583	94,124	16.1
<u>2. United Kingdom</u>						
1953	543	34	.06	-	-	-
1954	664	47	.07	-	-	-
1955	468	39	.08	1	140	15.0
1956	345	36	.10	1	174	15.0
1957	462	62	.13	*	60	15.9
1958	398	79	.20	-	-	-
1959	466	59	.13	1	155	15.0
1960	375	64	.17	1	203	15.0
1961	511	69	.14	-	-	-
1962	316	62	.20	*	8	16.0
1963	293	80	.27	14	2,150	15.0
<u>3. United States</u>						
1953	5,199	183	.04	178	30,109	17.0
1954	5,637	223	.04	204	34,880	17.1
1955	5,626	276	.05	257	42,387	16.5
1956	6,185	287	.05	268	45,854	17.1
1957	8,595	326	.04	292	50,285	17.2
1958	6,204	413	.07	359	63,380	17.7
1959	7,129	446	.06	404	70,706	17.5
1960	5,797	560	.10	419	73,775	17.6
1961	6,197	613	.10	428	73,727	17.2
1962	6,167	489	.08	350	61,291	17.5
1963	6,141	645	.10	527	85,667	16.3

^(a) Beginning in 1964 included in various statistical classes

Table 61

Imports: Calcium compounds, n.o.p., "except citrate", s.c. 8319^(a)

Tariff Items 208, 208t, ex. 208t, 711, ex. 711 and 875a

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	5,649	537	.09	500	77,604	15.5
1954	4,830	612	.13	527	80,779	15.3
1955	5,097	578	.11	472	72,745	15.4
1956	6,702	728	.11	592	91,914	15.5
1957	6,430	716	.11	572	89,848	15.7
1958	8,388	802	.10	643	99,210	15.4
1959	9,412	913	.10	741	116,650	15.8
1960	44,787	1,087	.02	856	136,701	16.0
1961	39,971	1,187	.03	950	149,963	15.8
1962	61,048	1,417	.02	1,068	174,296	16.3
1963	18,335	1,527	.08	1,258	194,538	15.5
<u>2. United States</u>						
1953	5,154	503	.10	489	76,033	15.5
1954	4,718	579	.12	510	77,941	15.3
1955	4,903	533	.11	437	67,395	15.4
1956	6,301	631	.10	518	80,839	15.6
1957	5,844	569	.10	451	70,670	15.7
1958	7,772	680	.09	560	86,279	15.4
1959	8,791	783	.09	648	101,472	15.6
1960	43,937	938	.02	750	120,608	16.1
1961	38,605	969	.03	816	128,904	15.8
1962	59,118	1,156	.02	910	148,975	16.4
1963	16,433	1,270	.08	1,136	175,264	15.4

(a) Beginning in 1964 included in various statistical classes

Table 62

Imports: Potash compounds, n.o.p., s.c. 8332^(a)

Tariff Items 208t and 711

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	<u>p.c. of</u>
	(000)	(000)	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	<u>Dutiable</u>
				(000)		<u>Value</u>
<u>1. Total</u>						
1953	2,155	347	.16	237	37,575	15.8
1954	2,335	388	.17	302	48,181	15.9
1955	3,247	486	.15	358	56,831	15.9
1956	4,194	589	.14	460	71,850	15.6
1957	6,059	761	.13	634	97,674	15.4
1958	6,603	769	.12	631	97,494	15.5
1959	9,654	1,001	.10	802	122,268	15.2
1960	12,488	1,138	.09	892	135,520	15.2
1961	11,914	1,201	.10	896	136,599	15.2
1962	10,191	1,184	.12	883	135,136	15.3
1963	8,379	1,160	.14	856	130,498	15.2
<u>2. United Kingdom</u>						
1953	298	65	.22	9	1,340	15.0
1954	117	41	.35	6	932	15.0
1955	211	64	.30	14	2,037	15.0
1956	239	89	.37	13	1,988	15.0
1957	213	55	.26	3	428	15.0
1958	207	51	.25	6	874	15.0
1959	490	126	.26	9	1,344	15.0
1960	483	104	.22	19	2,828	15.1
1961	777	138	.18	21	3,120	15.0
1962	786	152	.19	48	8,256	17.2
1963	695	138	.20	48	7,378	15.4

Table 62
(Cont'd)

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	Duty as p.c. of Dutiable Value
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>3. United States</u>						
1953	1,565	234	.15	199	31,798	16.0
1954	1,832	288	.16	258	41,350	16.0
1955	2,286	319	.14	305	48,891	16.0
1956	3,506	430	.12	414	64,979	15.7
1957	5,364	638	.12	597	92,119	15.4
1958	5,893	652	.11	589	91,234	15.5
1959	8,780	827	.09	772	117,719	15.2
1960	11,511	959	.08	855	130,014	15.2
1961	10,726	974	.09	837	127,734	15.3
1962	8,944	958	.11	803	122,111	15.2
1963	7,274	945	.13	775	118,084	15.2
<u>4. Germany, Fed. Rep. of</u>						
1953	48	12	.24	12	1,770	15.0
1954	92	11	.12	11	1,664	15.0
1955	220	23	.11	22	3,357	15.0
1956	133	20	.15	20	3,004	15.0
1957	161	18	.12	18	2,774	15.0
1958	146	16	.11	16	2,371	15.0
1959	149	13	.09	13	1,940	15.0
1960	172	30	.17	11	1,640	15.0
1961	179	48	.27	21	3,143	15.0
1962	149	24	.16	17	2,511	15.0
1963	76	21	.27	8	1,245	15.0
<u>5. Netherlands</u>						
1953	241	32	.13	13	1,921	15.1
1954	199	29	.15	8	1,218	15.0
1955	456	72	.16	9	1,366	15.0
1956	312	48	.15	10	1,532	15.0
1957	279	42	.15	8	1,266	15.0
1958	244	31	.13	1	98	14.9
1959	215	28	.13	1	91	14.9
1960	287	37	.13	*	54	15.0
1961	225	34	.15	11	1,624	15.0
1962	307	45	.15	9	1,361	15.0
1963	302	44	.14	12	1,811	15.0

(a) Beginning in 1958 includes former s.c. 8325; beginning in 1964 included in various statistical classes

Imports: Sodium compounds, n.o.p. s.c. 8366 (a)

Tariff Items 208t, 210g, 231 and 711

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$(000)	\$	
<u>1. Total</u>						
1953	12,847	1,371	.11	1,151	185,731	16.1
1954	16,050	1,519	.09	1,160	183,972	15.9
1955	17,375	1,577	.09	1,271	203,623	16.0
1956	19,744	1,804	.09	1,464	232,364	15.9
1957	23,331	1,996	.09	1,595	255,739	16.0
1958	23,721	2,282	.10	1,832	296,180	16.2
1959	26,070	2,435	.09	1,933	308,031	15.9
1960	25,937	2,858	.11	1,906	309,850	16.3
1961	28,488	3,213	.11	2,320	373,271	16.1
1962	27,470	2,777	.10	1,971	310,113	15.7
1963	30,605	2,929	.10	2,042	320,828	15.7
<u>2. United Kingdom</u>						
1953	1,654	158	.10	6	864	15.0
1954	1,249	147	.12	11	1,663	15.0
1955	1,666	199	.12	7	1,103	15.0
1956	2,089	270	.13	27	4,144	15.6
1957	1,953	291	.15	9	1,328	15.0
1958	2,399	322	.13	25	3,705	15.0
1959	3,347	438	.13	97	14,617	15.0
1960	2,741	453	.17	36	5,330	15.0
1961	3,851	625	.16	129	19,309	15.0
1962	4,261	635	.15	58	8,838	15.1
1963	3,407	634	.19	10	1,397	13.6
<u>3. United States</u>						
1953	10,504	1,072	.10	1,004	163,783	16.3
1954	14,051	1,276	.09	1,055	168,224	15.9
1955	14,954	1,221	.08	1,107	179,043	16.2
1956	16,436	1,334	.08	1,247	198,093	15.9
1957	19,932	1,473	.07	1,371	220,403	16.1
1958	19,508	1,716	.09	1,563	252,461	16.2
1959	20,563	1,691	.08	1,530	244,801	16.0
1960	20,773	2,020	.10	1,542	252,881	16.4
1961	21,365	2,094	.10	1,761	283,877	16.1
1962	20,753	1,755	.08	1,600	253,915	15.9
1963	23,720	1,778	.07	1,604	254,463	15.9

(a) Beginning in 1958 includes former s.c. 8341; beginning in 1964 included in various statistical classes

Imports: Magnesium salts or compounds, n.o.p., s.c. 8375^(a)

Tariff Items 208t and 711

<u>Year</u>	<u>Total Imports</u>		<u>Unit Value</u>	<u>Dutiable Value</u>	<u>Duty Collected</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>\$/lb.</u>	<u>\$</u>	<u>\$</u>	
	(000)	(000)		(000)		
<u>1. Total</u>						
1953	6,709	274	.04	231	35,245	15.2
1954	12,195	343	.03	289	44,906	15.5
1955	10,554	267	.03	229	34,922	15.2
1956	14,511	439	.03	334	50,952	15.3
1957	8,693	351	.04	263	40,036	15.2
1958	9,965	371	.04	333	50,738	15.2
1959	4,471	336	.08	287	43,833	15.3
1960	2,603	316	.12	256	38,798	15.2
1961	3,749	425	.11	383	58,183	15.2
1962	4,231	513	.12	452	68,897	15.2
1963	23,701	1,102	.05	1,045	158,371	15.2
<u>2. United Kingdom</u>						
1953	231	48	.21	5	806	15.0
1954	324	65	.20	11	1,690	15.0
1955	179	43	.24	5	722	15.0
1956	331	105	.32	-	-	-
1957	296	92	.31	5	780	15.0
1958	265	41	.16	4	703	17.8
1959	207	49	.24	1	219	15.0
1960	264	60	.23	1	215	15.0
1961	132	39	.30	-	-	-
1962	304	62	.20	2	364	15.8
1963	212	59	.28	2	351	15.0

Table 64
(Cont'd)

Year	Total Imports		Unit Value \$/lb.	Dutiable Value \$ (000)	Duty Collected \$	Duty as p.c. of Dutiable Value
	lb. (000)	\$ (000)				

3. United States

1953	6,440	225	.03	225	34,286	15.2
1954	11,737	275	.02	275	42,814	15.6
1955	10,375	224	.02	224	34,200	15.2
1956	14,104	324	.02	324	49,287	15.2
1957	8,275	251	.03	249	38,002	15.2
1958	9,592	326	.03	326	49,494	15.2
1959	4,241	286	.07	285	43,517	15.3
1960	2,273	255	.11	252	38,321	15.2
1961	3,366	379	.11	377	57,229	15.2
1962	3,757	440	.12	439	66,859	15.2
1963	23,251	1,026	.04	1,025	155,360	15.2

4. Germany, Fed. Rep. of

1953	11	*	.01	*	24	15.2
1954	123	2	.02	2	284	15.0
1955	-	-	-	-	-	-
1956	26	*	.02	*	69	14.9
1957	47	2	.04	2	276	15.0
1958	85	3	.04	3	469	15.0
1959	22	1	.03	1	97	15.4
1960	65	2	.03	2	262	15.2
1961	249	6	.02	6	856	15.2
1962	165	7	.04	7	1,121	16.0
1963	199	4	.02	4	619	15.0

(a) Beginning in 1964 included in s.c. 402-17, 472-79, 402-99, 404-99, 459-45

Imports: Other inorganic chemicals n.e.s., s.c. 405-99(a)

Tariff Items various

<u>Year</u>	<u>Total Imports</u>		<u>Unit</u>	<u>Dutiable</u>	<u>Duty</u>	<u>Duty as p.c. of Dutiable Value</u>
	<u>lb.</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>Collected</u>	
	(000)	(000)	\$/lb.	\$ (000)	\$	
<u>1. Total</u>						
1964	4,407	2,039	.46	772	126,294	16.4
<u>2. United Kingdom</u>						
1964	114	192	1.68	8	1,160	15.0
<u>3. United States</u>						
1964	3,847	1,772	.46	691	114,165	16.5
<u>4. France</u>						
1964	347	54	.16	54	8,088	15.0
<u>5. Germany, Fed. Rep. of</u>						
1964	4	2	.50	2	326	14.9
<u>6. Brazil</u>						
1964	95	17	.18	17	2,555	15.0

(a) Prior to 1964 included in various statistical classes

Table 1

Exports: Sodium sulphate, s.c. 8387^(a)

<u>Year</u>	<u>Quantity</u> ton	<u>Value</u> \$	Unit <u>Value</u> \$/ton
1955	76,894	1,263,911	16.44
1956	60,579	985,801	16.27
1957	37,023	593,390	16.03
1958	39,763	645,670	16.24
1959	47,922	752,116	15.69
1960	63,831	1,025,632	16.07
1961	87,132	1,331,428	15.28
1962	74,049	1,210,958	16.35
1963	65,348	1,076,969	16.48
1964	107,318	1,776,186	16.55
1965	116,345	1,927,251	16.56

(a) Not available prior to 1955. Beginning in 1961 renumbered as s.c. 404-62, "Sodium sulphate (salt cake and Glauber's salt)": beginning in 1962 renumbered as s.c. 404-63, "Sodium sulphate, anhydrous (salt cake)", also included in s.c. 404-99

Table 2

Exports: Metallic salts and peroxysalts of inorganic acids, n.e.s., s.c. 404-99^(a)

<u>Year</u>	<u>Quantity</u> cwt.	<u>Value</u> \$	Unit <u>Value</u> \$/cwt.
1961	795,120	5,082,254	6.39
1962	899,449	6,008,124	6.68
1963	1,032,799	6,958,779	6.74
1964	1,184,307	8,536,114	7.21
1965	1,374,050	9,645,009	7.02

(a) Not available prior to 1961. Beginning in 1962 includes part of s.c. 404-62

Table 3

Exports: Radioactive materials, n.o.p., s.c. 8475^(a)

<u>Year</u>	<u>Value</u> \$
1959	1,971,089
1960	1,076,731

(a) Not available prior to 1959. Beginning in 1961 included in s.c. 405-35 and 429-99

Table 4

Exports: Radioactive elements, isotopes and compounds, and heavy water, s.c. 405-35^(a)

<u>Year</u>	<u>Value</u> \$
1961	6,495,255
1962	6,504,059
1963	5,920,310
1964	5,999,461
1965	5,561,601

(a) Not available prior to 1961

Table 5

Exports: Inorganic chemicals n.e.s., s.c. 405-99^(a)

<u>Year</u>	<u>Quantity</u> cwt.	<u>Value</u> \$	<u>Unit</u> <u>Value</u> \$/cwt.
1961	246,954	1,263,849	5.12
1962	156,328	840,836	5.38
1963	254,699	1,336,962	5.25
1964	790,799	3,719,573	4.70
1965	911,429	4,251,720	4.66

(a) Not available prior to 1961

Table 6

Exports: Ammonium compounds, n.o.p., s.c. 8320^(a)

<u>Year</u>	<u>Quantity</u> cwt.	<u>Value</u> \$	Unit <u>Value</u> \$/cwt.
1953	6,217	13,837	2.23
1954	12,172	51,094	4.20
1955	6,327	26,723	4.22
1956	1,596	9,483	5.94
1957	7,551	24,765	3.28
1958	11,319	36,287	3.21
1959	476,588	1,543,562	3.24
1960	685,055	2,236,820	3.27

(a) Not available after 1960

Table 7

Exports: Calcium compounds, s.c. 8350^(a)

<u>Year</u>	<u>Quantity</u> cwt.	<u>Value</u> \$	Unit <u>Value</u> \$/cwt.
1953	391,505	1,388,955	3.55
1954	691,513	2,436,420	3.52
1955	703,362	2,805,619	3.99
1956	501,075	2,025,369	4.04
1957	1,641,513	7,203,438	4.39
1958	1,120,519	4,893,866	4.37
1959	1,014,374	4,283,214	4.22
1960	716,088	3,345,381	4.67

(a) Not available after 1960

Table 8

Exports: Soda and sodium compounds, n.o.p., s.c. 8390^(a)

<u>Year</u>	<u>Quantity</u> cwt.	<u>Value</u> \$	Unit <u>Value</u> \$/cwt.
1953	1,839,755	7,012,873	3.81
1954	2,549,642	6,532,614	2.56
1955	1,513,908	7,023,374	4.64
1956	1,213,471	5,891,569	4.86
1957	13,731	173,802	12.66
1958	21,479	254,577	11.85
1959	73,123	571,755	7.82
1960	36,125	415,774	11.51

^(a) Prior to 1955 includes s.c. 8387; not available after 1960

Table 9

Exports: Acids, n.o.p., s.c. 8030^(a)

<u>Year</u>	<u>Quantity</u> cwt.	<u>Value</u> \$	Unit <u>Value</u> \$/cwt.
1953	189,968	973,632	5.13
1954	166,087	1,293,777	7.79
1955	345,603	1,318,768	3.82
1956	407,513	1,734,301	4.26
1957	503,494	3,564,936	7.08
1958	391,304	3,186,475	8.14
1959	392,827	3,495,675	8.90
1960	484,040	4,504,763	9.31

^(a) Not available after 1960

APPENDIX IIPrincipal Relevant Recommended Items

<u>Goods Subject to Duty and Free Goods</u>		<u>B.P.</u>	<u>M.F.N.</u>	<u>G.T.</u>
R-7	208 - Argols Arsenic sulphides, natural Boric acid, crude natural Copper, crude precipitate of Sodium borates, crude natural, and concentrates thereof, calcined or not	Free	Free	Free
R-8	208g - Barium-cadmium complex, barium-silicon complex, calcium- magnesium complex, calcium- silicon complex; calcium molybdate, tungsten oxide, vanadium oxides, whether in powder, in lumps, or formed into briquettes by the use of a binding material; all the foregoing when for use in the manufacture of steel under such regulations as the Minister may prescribe	Free	Free	5
R-9	208k - Crude oxide of cobalt	Free	10	10
R-10	208t - Drugs, n.o.p., of a kind not produced in Canada	Free	15	25
R-12	210b - Sodium carbonates, natural	10	15	25
R-13	210d - Natural sodium sulphate	10	15	25
R-14	*211 - Bauxite, whether or not washed or calcined	Free	Free	Free
R-17	240 - Whiting or whitening; natural calcium sulphate, n.o.p.	Free	10	10
R-19	*295a - Wollastonite; natural zirconium silicate	Free	Free	Free
R-20	296b - (1) Magnesite, dead-burned or sintered, n.o.p.; magnesite, caustic calcined, n.o.p.; plastic magnesia; magnesium oxide, n.o.p.	15	15	30
	(2) Magnesium carbonate, basic or otherwise, excepting crude rock, n.o.p.	Free	15	25
R-21	296e - Magnesium oxide, or calcined magnesite, for use exclusively in the manufacture of electrical cables	Free	Free	Free

	<u>Goods Subject to Duty and Free Goods</u>	<u>B.P.</u>	<u>M.F.N.</u>	<u>G.T.</u>
R-24	*333 - Cinnabar	Free	Free	Free
R-25	*334 - Kryolite or cryolite, n.o.p.	Free	Free	Free
R-31	663b - Goods which enter into the cost of manufacture of fertilizers when imported for use exclusively in the manufacture of fertilizers	Free	Free	Free
R-32	*669 - Corundum, n.o.p., emery and garnet, in bulk, crushed or ground	Free	Free	Free
R-33	*671 - Artificial abrasive grains, other than chemically defined products, crushed or ground	Free	Free	Free
R-34	681d - Uranium depleted in U 235, in the form of pigs, ingots, billets, or bars; residues resulting from the processing abroad of uranium metal, salts or oxides	Free	Free	25
R-35	791 - Materials of all kinds for use in producing or manufacturing the products of Recommended Item 38.11, when imported exclusively for such use, whether or not otherwise enumerated in Schedule A, subject to such regulations as the Minister may prescribe	Free	Free	Free
R-36	Metals, n.o.p., not including alloys, in lumps, powders, ingots or blocks:			
	(1) Other than the following	Free	15	25
	(2) Cadmium	10	15	25
	(3) Cobalt	Free	10	25
	(4) Electrolytic manganese for alloying purposes	Free	Free	20
R-37	Natural oxides, n.o.p., not including ores of metals:			
	(1) Other than the following	Free	10	25
	(2) Antimony oxides	Free	12 $\frac{1}{2}$	25
	(3) Copper oxides	Free	15	25
	(4) Manganese oxides	Free	Free	Free
	(5) Molybdenum oxides	10	15	25
	(6) Nickelous oxide	10	15	25
	(7) Tin oxides	Free	15	25
	(8) Zirconium oxide	Free	5	15
R-38	Calcined witherite	Free	15	25

	<u>Goods Subject to Duty and Free Goods</u>	<u>B.P.</u>	<u>M.F.N.</u>	<u>G.T.</u>
28.35	Sulphides; polysulphides:			
	(1) Other than the following	Free	15	25
	(2) Sodium sulphide	Free	12½	20
28.36	Dithionites, including those stabilized with organic substances; sulphonylates:			
	(1) Other than the following	Free	15	25
	(2) Sodium dithionite	Free	Free	Free
	(3) Sodium formaldehyde sulphonylate	Free	Free	Free
	(4) Zinc dithionite	Free	Free	Free
	(5) Zinc formaldehyde sulphonylate	Free	Free	Free
28.37	Sulphites and thiosulphates:			
	(1) Other than the following	Free	15	25
	(2) Sodium bisulphite (sodium hydrogen sulphite)	Free	12½	20
	(3) Sodium metabisulphite	Free	12½	20
	(4) Sodium sulphite, neutral	Free	12½	20
	(5) Sodium thiosulphate, other than anhydrous	10	15	25
28.38	Sulphates (including alums) and persulphates:			
	(1) Other than the following	Free	15	25
	(2) Aluminum ammonium sulphate, not calcined	Free	10	15
	(3) Aluminum potassium sulphate, not calcined	Free	10	15
	(4) Aluminum sodium sulphate, not calcined	Free	10	15
	(5) Aluminum sulphate, basic or normal	Free	10	15
	(6) Barium sulphate	Free	10	15
	(7) Calcium sulphate	Free	Free	Free
	(8) Chromium potassium sulphate	Free	Free	10
	(9) Chromium sulphate, basic	Free	Free	10
	(10) Cobalt sulphate, other than pharmaceutical and A.R. grades	10	15	25
	(11) Cupric sulphate	Free	10	15
	(12) Ferrous sulphate			
	(i) exsiccated U.S.P.	10	15	25
	(ii) other	Free	10	15
	(13) Lead sulphate, tribasic	10	15	25
	(14) Magnesium sulphate, dried pure powder	10	15	25
	(15) Nickel sulphate of technical or commercial grade	10	15	25
	(16) Potassium sulphate containing, in the dry state, more than 52 per cent by weight of K ₂ O			

<u>Goods Subject to Duty and Free Goods</u>		<u>B.P.</u>	<u>M.F.N.</u>	<u>G.T.</u>
28.38				
(Cont'd)				
	(i) not less than 99 per cent pure	10	15	25
	(ii) less than 99 per cent pure	Free	Free	Free
	(17) Sodium sulphate, acid (sodium hydrogen sulphate)	Free	Free	Free
	(18) Sodium sulphate, neutral	10	15	25
28.39	Nitrites and nitrates:			
	(1) Other than the following	Free	15	25
	(2) Bismuth subnitrate (basic bismuth nitrate)	10	15	25
	(3) Cobalt nitrate other than A.R. grade	10	15	25
	(4) Potassium nitrate	Free	Free	Free
	(5) Sodium nitrate containing, in the dry state, more than 16.3 per cent by weight of nitrogen	Free	Free	Free
	(6) Sodium nitrite	Free	12½	25
	(7) Strontium nitrate	Free	Free	Free
28.40	Phosphites, hypophosphites and phosphates:			
	(1) Other than the following	Free	15	25
	(2) Lead phosphite, dibasic	10	15	25
	(3) Sodium hexametaphosphate	10	15	25
	(4) Sodium phosphate, dibasic, pharmacopoeial grade	10	15	25
	(5) Sodium phosphate, monobasic, pharmacopoeial grade	10	15	25
	(6) Sodium phosphate, tribasic, commercial grade	10	15	25
	(7) Sodium pyrophosphate, normal, other than A.R., C.P. and pharmacopoeial grades	10	15	25
	(8) Sodium tripolyphosphate	10	15	25
28.41	Arsenites and arsenates:			
	(1) Other than the following	Free	15	25
	(2) Sodium arsenates	Free	10	15
	(3) Sodium arsenite	10	15	25
28.42	Carbonates and percarbonates; commercial ammonium carbonate containing ammonium carbamate:			
	(1) Other than the following	Free	15	25
	(2) Bismuth carbonate and bismuth carbonate, basic	10	15	25
	(3) Cobaltous carbonate, basic	10	15	25
	(4) Lead carbonate, basic	10	15	25
	(5) Potassium carbonate	Free	Free	Free

<u>Goods Subject to Duty and Free Goods</u>		<u>B.P.</u>	<u>M.F.N.</u>	<u>G.T.</u>
28.42				
(Cont'd)				
	(6) Sodium bicarbonate	Free	12 $\frac{1}{2}$	20
	(7) Sodium carbonate, anhydrous	10	15	25
	(8) Sodium carbonate decahydrate (sal soda)	10	15	25
28.43	Cyanides and complex cyanides:			
	(1) Other than the following	Free	15	25
	(2) Calcium cyanide	Free	Free	Free
	(3) Potassium cyanide	Free	Free	Free
	(4) Sodium cyanide	Free	Free	Free
	(5) Sodium ferricyanide	Free	Free	Free
	(6) Sodium ferrocyanide	Free	Free	Free
28.44	Fulminates, cyanates and thiocyanates	Free	15	25
28.45	Silicates; commercial sodium and potassium silicates:			
	(1) Other than the following	Free	15	25
	(2) Calcium silicates	Free	Free	Free
	(3) Sodium silicates	Free	12 $\frac{1}{2}$	20
	(4) Zirconium silicate	Free	Free	Free
28.46	Borates and perborates:			
	(1) Other than the following	Free	15	25
	(2) Sodium tetraborate	Free	Free	Free
28.47	Salts of metallic acids (for example, chromates, permanganates, stannates):			
	(1) Other than the following	Free	15	25
	(2) Sodium dichromate	Free	12 $\frac{1}{2}$	25
	(3) Sodium stannate	Free	12 $\frac{1}{2}$	25
28.48	Other salts and peroxy salts of inorganic acids, but not including azides:			
	(1) Other than the following	Free	15	25
	(2) Ammonium nickel sulphate, technical or commercial grade	10	15	25
	(3) Ammonium zinc chloride	10	15	25
28.49	Colloidal precious metals; amalgams of precious metals; salts and other compounds, inorganic or organic, of precious metals, in- cluding albuminates, proteinates, tannates and similar compounds, whether or not chemically defined:			

<u>Goods Subject to Duty and Free Goods</u>		<u>B.P.</u>	<u>M.F.N.</u>	<u>G.T.</u>
28.49 (Cont'd)				
(1) Other than the following	Free	15	25	
(2) Amalgams of precious metals: gold, iridium, osmium, palladium, platinum, rhodium, ruthenium and silver	15	20	25	
(3) Auric chloride (gold chloride)	10	15	25	
(4) Colloidal suspensions of precious metals: gold, iridium, osmium, palladium, platinum, rhodium, ruthenium and silver	15	20	25	
(5) Gold sodium cyanide	10	15	20	
(6) Silver bromide	10	15	20	
(7) Silver chloride	10	15	20	
(8) Silver cyanide	10	15	20	
(9) Silver iodide	10	15	20	
(10) Silver nitrate	10	15	20	
28.50	Fissile chemical elements and isotopes; other radio-active chemical elements and radio-active isotopes; compounds, inorganic or organic, of such elements or isotopes, whether or not chemically defined; alloys, dispersions and cer- mets, containing any of these elements, isotopes or compounds	Free	Free	Free
28.51	Isotopes and their compounds, in- organic or organic, whether or not chemically defined, other than isotopes and compounds falling within Recommended Item 28.50	Free	Free	Free
28.52	Compounds, inorganic or organic, of thorium, of uranium depleted in U 235, of rare earth metals, of yttrium or of scandium, whether or not mixed together:			
(1) Other than the following	Free	15	25	
(2) Thorium oxide (thorium dioxide)	10	15	25	
28.53	Liquid air (whether or not rare gases have been removed); com- pressed air	Free	Free	Free
28.54	Hydrogen peroxide (including solid hydrogen peroxide or urea peroxide)	Free	15	25
28.55	Phosphides:			
(1) Other than the following	Free	15	25	
(2) Iron phosphide (ferrophosphorus) used in the manufacture of steel or iron	Free	5	5	

<u>Goods Subject to Duty and Free Goods</u>		<u>B.P.</u>	<u>M.F.N.</u>	<u>G.T.</u>
28.56	Carbides (for example silicon carbide, boron carbide, metallic carbides):			
	(1) Other than the following	Free	15	25
	(2) Artificial abrasive grains, crushed or ground	Free	Free	Free
	(3) Calcium carbide	5	10	20
28.57	Hydrides, nitrides and azides, silicides and borides:			
	(1) Other than the following	Free	15	25
	(2) Artificial abrasive grains, crushed or ground	Free	Free	Free
	(3) Sodium azide	10	15	20
28.58	Other inorganic compounds (including distilled and conductivity water and water of similar purity); amalgams, except amalgams of precious metals:			
	(1) Other than the following	Free	15	25
	(2) Amalgams, except amalgams of precious metals	15	20	25
	(3) Calcium cyanamide containing, in the dry state, more than 25 per cent by weight of nitrogen	Free	Free	Free
	(4) Cyanogen bromide	Free	Free	Free



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